

COMPUTERWORLD

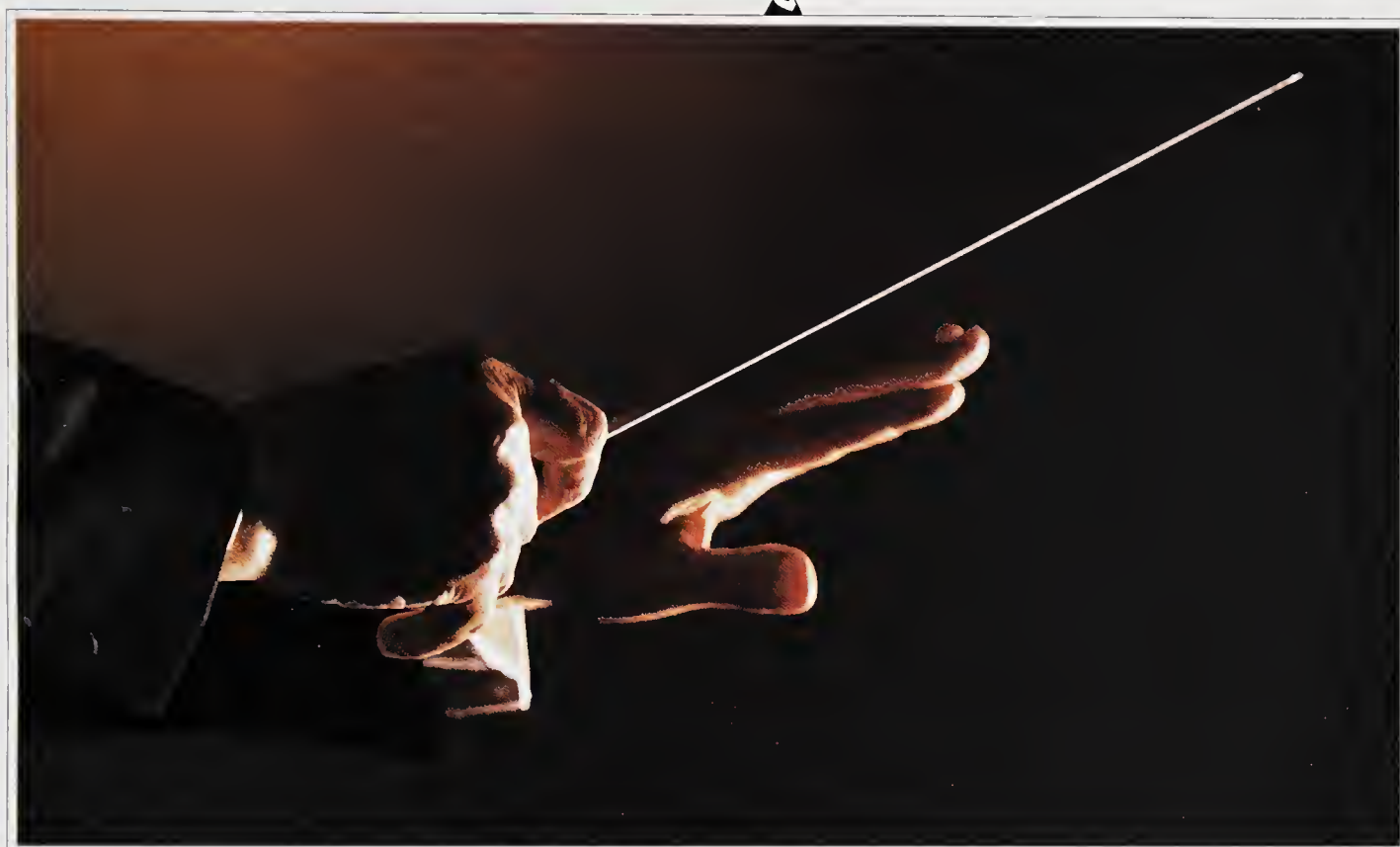
November Volume 1, Number 1

CLIENT/SERVER

JOURNAL

Joyce Young, Director of
Decision Support Systems at
Helene Curtis Industries

IBM Client/Server



IBM is a registered trademark of International Business Machines © 1993 IBM Corp

How do you get everyone working in concert?

To stay competitive, you're constantly searching for better ways to orchestrate the flow of information. How do you get more out of your PCs? How can you make the most of your existing systems? What can be done to streamline your organization?

More often than not, the answer is IBM Client/Server.

IBM can develop open client/server solutions that put the combined strength of all

your computer systems to work for you. We have thousands of specialists worldwide who can work with you to custom-tailor a solution that's right for your particular business. And we'll work with you at any stage of the process, from initial consulting to helping you tie everything together—we'll even manage your systems for you.

Whether you're upsizing or downsizing, nobody knows how to ensure systems reliability and security for your "mission critical" applications better than IBM.

We can also help you integrate different types of hardware, software and networks. We have the industry's widest array of software and network products, and we support Distributed Computing Environment (DCE), enabling different computer brands and platforms to work together in harmony.

For more and more companies, IBM Client/Server is the key to getting everyone working in concert. We've done it for hundreds of companies. We can do it for you.

For more information, call 1 800 IBM-0045, ext. 10.

There's never been a better time to do business with **IBM**

INSIDE

November 1993

Volume 1, Number 1

**CLIENT/SERVER
JOURNAL**

**ALSO
IN THIS
ISSUE**
.....

PERSPECTIVES

A sampling of market research, user experiences and expert views — plus a touch of humor from Computerworld cartoonist Rich Tennant.

5

USER VIEWPOINTS

Top IS managers from Kash n' Karry Food Stores and Lehman Brothers share their observations on real-world issues in client/server.

8, 63

THE CSJ PRODUCT REVIEW

Information Builders' EDA/SQL shows itself to be reliable in accessing multiple databases, but users need a working knowledge of its Focus 4GL.

58

CSJ SURVEY ON SQL GATEWAYS

More than 200 users report a generally high level of satisfaction with SQL products but bemoan a lack of staff expertise and data integration.

61



Helene Curtis, p. 26



Interviews with Bill Gates, Scott McNealy, p. 42



Client/server costs, p. 35

26 **COVER STORY**

Making Waves at Helene Curtis

Savvy use of client/server technology handed the sales force at this leading personal care company a competitive edge in a cutthroat business.

By Maryfran Johnson

35 **Sticker Shock!**

Calculating the true costs of client/server conversions can be a many-splendored exercise, touching on everything from user training and hardware upgrades to network rebuilding. *By Hugh Ryan*

14 **Dear Diary ... A Two-Year Technology Trek to Client/Server**

A user's point of view on how one Florida county survived its giant step from traditional to leading-edge technology. *By Eric Singleton*

46 **Keeping a Grip on User Expectations**

Up-front honest talk and frequent progress reports from managers can help users stay grounded in reality during client/server projects.

By Julia King

20 **Confusion Reigns Over COSE**

Users are wondering how the Common Open Software Environment for Unix desktops is going to help them with client/server rollouts.

By Frank Hayes

52 **Mainframes: Moving Beyond Traditional Roles**

Data centers are being called on these days to "babysit" Unix servers and assist with LAN service and support.

By Johanna Ambrosio

42 **Warring Over Windows**

Exclusive interviews with archrivals Bill Gates of Microsoft Corp. and Scott McNealy of Sun Microsystems, Inc.

By Maryfran Johnson

31 **Columbia U. Sharpens Financial Aid Image**

Productivity is up and bureaucracy down with a new application system that incorporates electronic document imaging for this New York-based university. *By David Baum*

How to make more of your most valuable asset:

IBM
Client/Server
Workgroup
Software

Suddenly, you have more control over your time. You can schedule meetings with dozens of



people at once. No more telephone tag. No more time lost chasing busy people. Welcome to Time and Place/2,™ the leading edge LAN time management

solution from IBM that's a powerhouse of client/server productivity.

Time and Place/2 helps organize everything. From prioritized "to do" lists to deadline "alarms" to plans of people and their assigned tasks.

It does routine scheduling, posts updates and displays designated users' personal calendars with daily, weekly and monthly views. And much more.

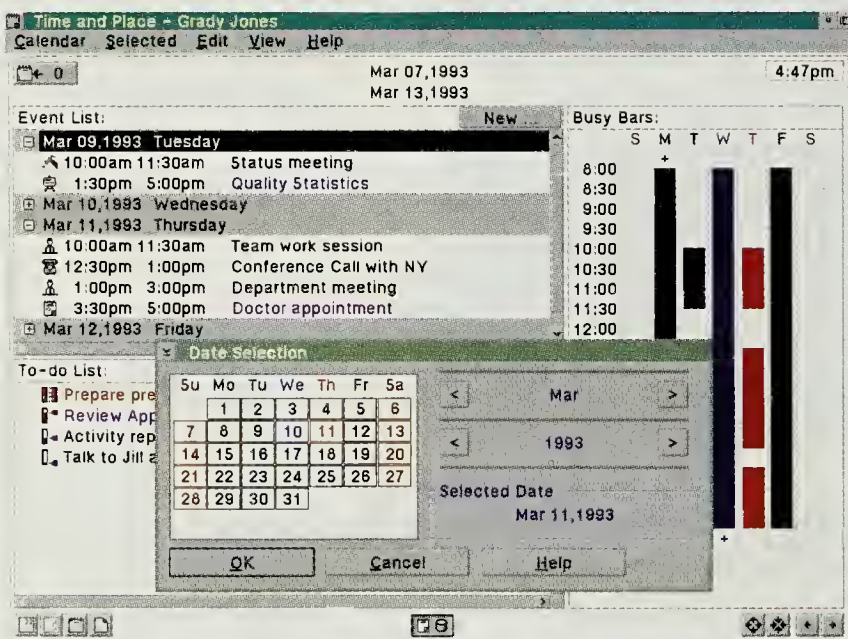
Time and Place/2 can search for a time everyone is free for a meeting--then schedule it automatically. It

can even remind you as the time nears. With its state-of-the-art

graphical user interface, Time and Place/2 is easy to learn and use. Based on OS/2® 2.0, it lets you harness the 32-bit power of today's 386+ machines. What's more, it also works with DOS workstations under Microsoft Windows.™ And it lets you communicate with IBM's OfficeVision® and through E-mail over other networks.

On-line help is always available. And it comes with IBM's world class service and support. Don't lose another nanosecond. Call now to order Time and Place/2 or to get a free demo diskette. Dial 1 800 IBM-CALL, ext. S41. In Canada, to order or for more information, call 1 800 465-1234, ext. 379.

Time.



Time and Place/2, another software solution from IBM.



Editor

Maryfran Johnson

Managing Editor

Catherine McCrorey

Art Director

Tom Monahan

Design Director

Susan Yousem/Artworks

Copy Editor

Kimberlee A. Smith

Computerworld**Editor in Chief**

Bill Laberis

Computerworld Editor

Paul Gillin

Contributing Writers

Johanna Ambrosio

David Baum

Sally Cusack

Bradford W. Day

Frank Hayes

David A. Kelly

Julia King

Ted Krum

Stefanie McCann

Hugh Ryan

Eric Singleton

Michael L. Sullivan-Trainor

**Contributing
Columnists**

Shaku Atre,
Atre Associates, Inc.

Jerrold Grochow,
American Management
Systems, Inc.

Judith Hurwitz,
Hurwitz Consulting Group

David Sherr,
Lehman Brothers, Inc.

Jim Stikeleather,
Kash n' Karry Food
Stores, Inc.

**EDITOR'S NOTE****Maryfran
Johnson****Defining client/
server seems
to be a new
kind of parlor
game for the
industry**

powerful, more affordable and easier to use."

Defining client/server seems to be a new kind of parlor game for the industry. I've heard it described as a style of computing, a collection of technologies, an architectural platform, an application development method, a systems integration solution, a re-engineering tool and — heaven help us all — a paradigm shift.

The one point everyone agrees on is that client/server is the opposite of mainframe-centric or host-based computing. But mainframes and data centers absolutely have a role to play. (Check out our "Data Centers to the Rescue" story in this issue.) Gartner Group's Jim Cassell has a wonderful image he invokes when the talk turns to replacing mainframes with PC networks. He likens the move to a farmer replacing his team of oxen with 10,000 chickens.

Another place to sample a multitude of views on this subject is the comp.client-server discussion group on the Internet. A few weeks ago, Ravi Kalakota of the University of Texas' department of management science and information systems cataloged a series of different definitions for client/server. "This technology should not be viewed as a silver bullet but as a concept of immense potential if applied correctly," he wrote.

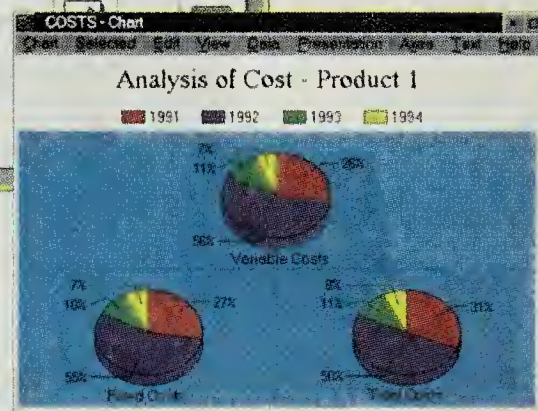
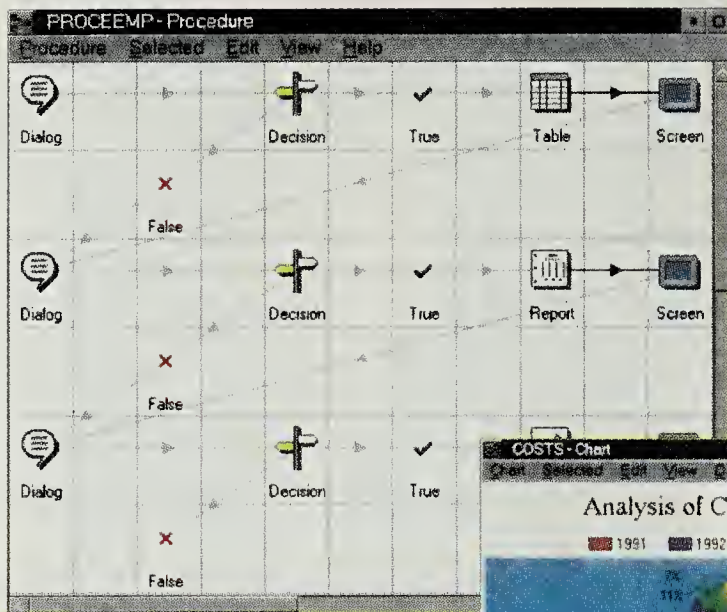
"Client/server has so many different flavors. It won't look the same everywhere you go," adds Joyce Young, director of decision support systems at Helene Curtis Industries. "That's why it's so hard to define — there's no textbook."

While there may be no textbook on client/server, what we hope to provide in *Computerworld Client/Server Journal* is a chronicle of this technology as it unfolds — from the user's point of view.

This issue, for example, includes stories about the importance of managing user expectations during client/server projects and how organizations as diverse as Helene Curtis and Columbia University benefit from the new technologies and learn from their mistakes. Also featured are exclusive interviews with Microsoft CEO Bill Gates and Sun Microsystems CEO Scott McNealy.

In the end, defining client/server is far less important than using it to your company's best advantage. Despite any attempts I've made to define it, only one person has ever been satisfied with my answer. But maybe Garry was just humoring his big sister. ■

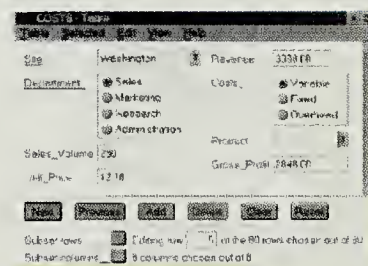
A handwritten signature of Maryfran Johnson in black ink.



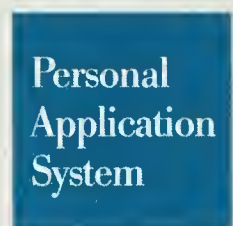
Make a personal statement

Corporate data. As important as it is, it can also be pretty impersonal. Well, Personal Application System from IBM Programming Systems will not only let you get data quickly, but help you give it

in



an impersonal world.



some pizzazz as well. So you can review it. Select it. Sort it. Analyze it. Graph it. Chart it. Bring it to life. And turn dull, impersonal data into an insightful, personal statement.

Personal Application System is a comprehensive decision support tool that provides transparent access, from OS/2® or Windows,™ to data throughout your company. It also makes it easy to initiate sophisticated queries and generate informative reports with data which resides within the DB2® family of relational databases or a variety of other data formats. Optional modules let you do statistical analysis, planning, project management (OS/2 only), and even end-user application development. And Personal Application System is part of IBM's Information Warehouse,™ an open client/server framework.

So make your corporate data a more personal experience. To order Personal Application System or for more information, just call 1 800 IBM-CALL, ext. 137K (in Canada call 1 800 465-1234, ext. 2002). And you thought you'd never respond to a personal ad.

IBM, OS/2 and DB2 are registered trademarks and Information Warehouse is a trademark of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation. ©1993 IBM Corp.



PERSPECTIVES

A QUARTERLY REVIEW OF CLIENT/SERVER VIEWS AND EVENTS

Reality Check

What does client/server really mean for IS shops?

That question was posed recently in an Internet discussion group by Steve Croft, a database system administrator at the California Department of Water Resources, which is transitioning from older mainframe technologies to client/server.

Some of Croft's observations thus far include:

- Smaller application development is pushed out to the end user, and often there is no need to rely on IS. This area will likely be the source of the greatest productivity gains.

- Options for tools are (or will be) countless. Rather than having IS evaluate and bless each tool, it should set criteria for sanctioned end-user tools.

- The IS organization should split applications and data responsibilities, with one group focused exclusively on guarding data integrity while another group takes care of application or integration issues.

- The IS department must become more of a facilitator than a controller. This means more planning, a shift in viewpoints and a learning curve to keep data models accurate. The advantage: a productivity boost for end users.

Croft can be reached at stevec@water.ca.gov via the Internet.

C&NW: A Freightload of Savings and Fewer Errors

When Chicago and North Western Transportation Co. (C&NW) needed to move invoices faster and more accurately, it turned to client/server. The move saved \$1 million, mainly by eliminating 30 invoicing-related jobs.

C&NW also reduced errors by 50%, increased productivity and automated its billing system with an environment that links more than 100 users over its Token Ring-based network.

As the eighth largest freight railroad in the U.S., the \$1 billion company moves more than 40,000 carloads daily of items such as coal, paper and grain. Tracking and billing were



C&NW Transportation reduced billing errors by 50% with client/server

"mistake-prone challenges" before C&NW installed the client/server system, officials said.

The system includes Tricord Systems, Inc.'s PowerFrame 486/33 enterprise servers, Microsoft Corp.'s SQL Server running OS/2 2.0 and Novell, Inc.'s NetWare v3.11.

The cost of the project was recouped in one year, said Jeff Liggett, C&NW's vice president of revenue and disbursements accounting. C&NW can now match most of its billing transactions to existing data and billing information in its SQL database. The billing system automatically generates 80% of 1,200 invoices produced each day, compared with

the 20% done on C&NW's IBM 3090 mainframe.

While it has improved business, C&NW's move to client/server was not easy. "The first two weeks, we had a lot of downtime, since we brought a lot of new products together at one time," Liggett said. "If we were to do it again, we probably would have done more user and volume testing."

"At the time the system was designed, our Novell network only had 30 nodes, but we planned on 100," he added. "When we rolled the system out and got over 30 users, we started having problems." ■

Written by David A. Kelly, a free-lance writer in West Newton, Mass.

Who Cares About Software Standards?

A survey of 50 Fortune 1,000 companies shows that

80%

already have standards in place today and

66%

felt their use would increase during the move to client/server

Source: Forrester Research, Inc.

A disk problem causes you incredible discomfort. A lapse in memory takes its toll on your entire system. It wasn't anyone's fault. But now it's yours. Because if it affects the LAN, you're the one who has to deal with it.

Introducing PS/2 Server 195

Introducing the PS/2® Server 195. A server that stares failure in the face. Then succeeds. A client/server solution that delivers rock-solid reliability, around-the-clock availability, remarkable scalability and affordability.

The new Server 195 is configured and built to order. The base system is Novell® NetWare® Tested and Approved, and also runs OS/2®, OS/2 LAN Server and LAN Manager. You get 32MB of ECC memory, a 486 DX/



50 MHz processor and RISC-based processors on each of the two standard SCSI channels and memory controller for starters. Up to 28GB of hardfile storage is avail-

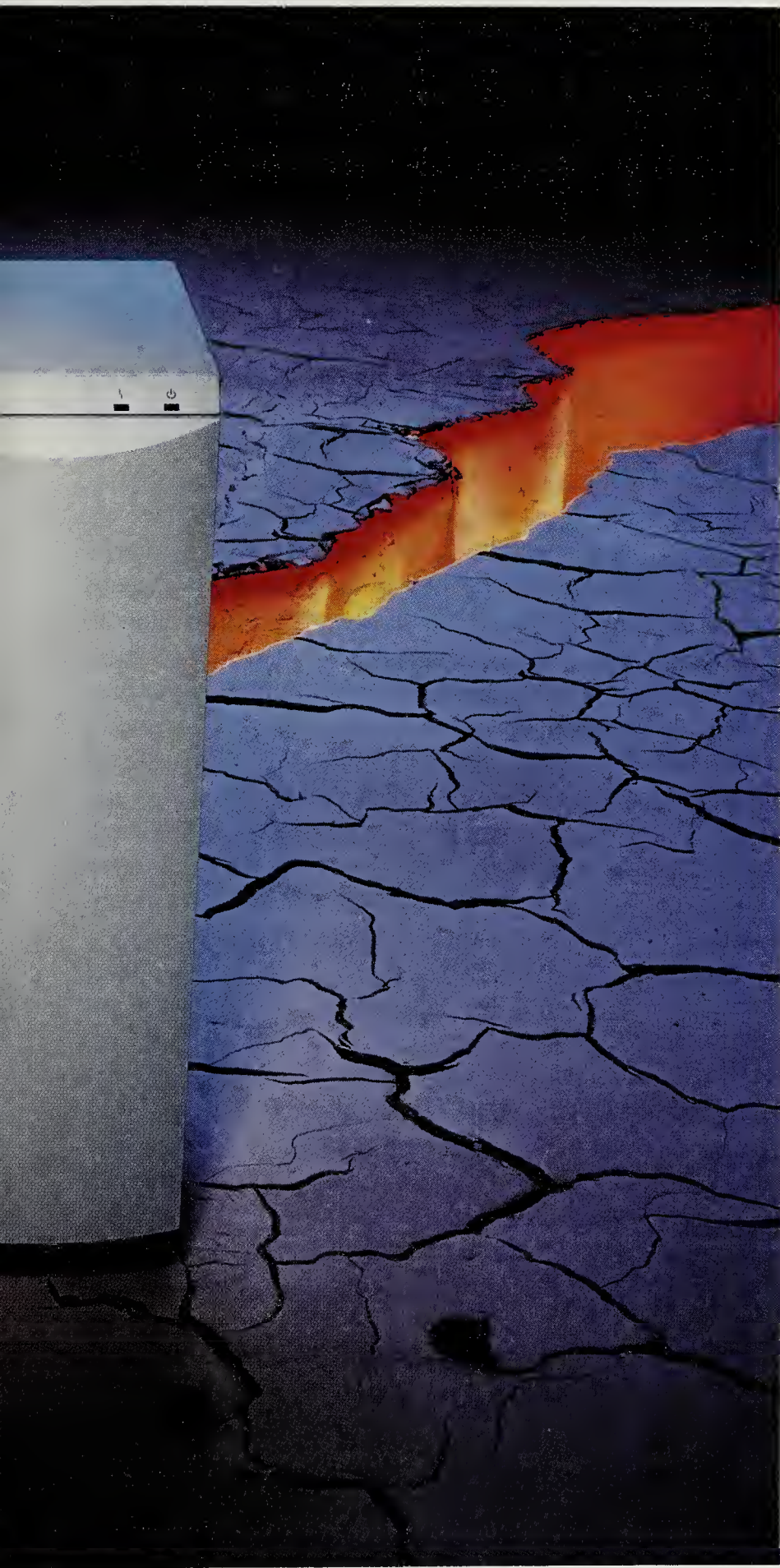
able. And since the Server 195 is completely upgradable—to PS/2 Server 295 specs—you can add subsystems to achieve a higher level of fault tolerance when implementing your client/server environment.

With the Maximum Availability and Support System/2 (MASS/2) option, the Server 195 provides comprehensive local and remote server monitoring, control, tuning and recovery capabilities.

*Available from IBM, M-F, 8 A.M. to 5 P.M. in your time zone. **For information regarding the terms of IBM's money-back guarantee and limited warranty, please call 1 800 772-2227. Copies of IBM's money-back guarantee and statement of limited warranty are available upon request. IBM, Micro Channel, PS/2, OS/2, HelpWare and HelpCenter are registered trademarks of International Business Machines Corporation. Novell and NetWare are registered trademarks of Novell, Inc. ©1993 IBM Corp.



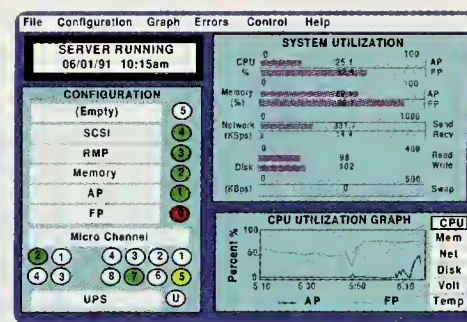
It even tolerates



MASS/2 works with a battery backed-up Remote Maintenance Processor (RMP) option that can notify you of errors, failures, corrective action

taken—even provide system access during a power failure. And

you can extend fault tolerance to the entire disk subsystem by adding an Orthogonal RAID-5 Disk Array/2.



The MASS/2 option has a user-friendly GUI that lets you distribute computing power across your organization from a central location.

Server 195/295 Comparison

Feature	Server 195	Server 295 Model 1	Server 295 Model 2
Remote Maintenance Processing and Modem	optional	standard	standard
Processors	486/50 MHz	MP-486/33 & 50 MHz	MP-2 486/50 MHz
Available Slots	8 Micro Channel®	12 Micro Channel	12 Micro Channel
MASS/2	optional	standard	standard

Like all PS/2s, the Server 195 is backed by IBM HelpWare®—a range of service and support so complete, it's hard to find fault with. You get a three-year on-site warranty with four-hour average response time*, around-the-clock set-up, usage and service assistance on IBM hardware and software during warranty,** a 30-day money-back guarantee** and more. For more information or an IBM certified dealer near you, call our Personal Systems HelpCenter® at 1 800 772-2227 or TDD ASCII 1 800 426-4238. In Canada, call 1 800 465-7999. The new PS/2 Server 195 is so reliable, why would you tolerate anything less?



your worst faults.

Surviving on the Cutting Edge



JIM STIKELEATHER

Stikeleather is director of systems development at Kash n' Karry Food Stores, Inc. in Tampa. His Internet address is stike@knk.com.

As the American humorist Don Marquis (1878–1937) once observed, “An optimist is a guy who has never had much experience.”

With that in mind, consider the confluence of today's technologies — client/server, object-oriented, inference, neural networks and functional programming — that are being used to build the information systems of the future.

While the media and vendor hype is a little premature, the good news is that these technologies really do work. The bad news is that for most of us in commercial IS, the potential for failure is very real and very high. Why? To paraphrase the infamous Clinton campaign sign, “It's the people, stupid!”

These technologies and the information systems that can be built with them are a paradigm shift in the truest sense. And nothing can prepare you for the intellectual, cultural, organizational and people upheavals this kind of shift will inevitably cause.

Human beings as a rule abhor change, and the future of IS is full of change. The users we service are changing. Their jobs are constantly re-engineered and redefined. They have become more knowledgeable, capable and experienced in the IS arts — and therefore more demanding and less tolerant.

The nature of business has changed. It is international. It runs 24 hours a day. It is real time, and old boundaries are gone. Customers, suppliers, governments, communities — even competitors — demand access and contribution to the information used to run the business.

In the first chapter of *Information and Logic*, Keith Devlin tells a story about a 15th-century iron worker. When asked “What is iron?” he would talk about its attributes (hardness, melting point, etc.) and what he could do with it. Not until modern atomic theory, how-

ever, could someone truly answer the question “What is iron?”

Today, we should be asking “What is information?” Until we understand information as well as we came to understand iron, we will not be able to deliver on the promise and potential of these new technologies.

Perhaps even riskier for future information systems is our lack of understanding about cognition: how humans recognize, assimilate and use information. The new information systems will be intelligent, real-time simulations of the business. They will make many of the recurring business decisions and identify patterns and changes, drawing a human's attention to apply the creativity, analysis and planning skills needed.

The technologies, products and services to support the new systems are immature and the techniques for applying them even less developed. Increasingly, we need developers who are businesspeople, analysts, designers, programmers and testers all rolled into one.

The next five years will be spent developing common knowledge and structure toward applying this technology. Until then, we will be feeling our way around, like someone searching for a black cat in a darkened room where there is no cat. Yet we will be hearing the consultants, the vendors and even the trade press shouting, “I've got it!”

For the last two years at Kash n' Karry, we have moved forward with these technologies. In a nutshell, the technologies worked, and the people had difficulty. We had high turnover, we lost productivity, we spent time inventing technology and methodology instead of addressing problems.

Still, we have been successfully and rapidly delivering award-winning systems, though only with pieces of the technology available. Only now we know how much we don't know. ■

Human beings as a rule abhor change, and the future of IS is full of change.

Sex, Lies and Selling Software

In this brave new world of open systems and client/server computing, the decisions involved with purchasing software and tools are more difficult than ever.

Decision makers often lack the experience to judge the quality and longevity of client/server technology. This becomes especially tough when users are dealing with a market in transition, where every software vendor is positioning its products in line with the latest trends.

I recently took part in the software evaluation process at a medium-size manufacturing firm that was looking for client/server software to implement an integrated manufacturing system. At least seven major independent software vendors lined up at the door, eager to do business.

Yet what I saw during that evaluation process made me fearful for companies trying to make software decisions that can mean life or death for their organizations. One vendor spent more than two hours describing the sophistication of its client/server software. The pitch was replete with all the right jargon: It was object-oriented, complied with Posix specifications and included mention of the Object Management Group, the SQL Access Group and X/Open Co.

Not until we started asking implementation-oriented questions did reality arrive. It turned out that the software had not actually implemented *any* of these sterling standards. Yet the vendor kept stressing their importance and kept promising to support them when it was feasible...someday.

Then the critical question: How many customers are using this software and for how long?

It seems there was one customer about to begin using this product. And naturally, this vendor was very eager to partner with customers on development. What

"partnering" meant here was "Help us complete our development work; we've fallen behind." Unless your organization is prepared to accept a major risk in order to have strategic software that no one else has, stay away from systems without customers.

My advice is to purchase a product that already has more than three customers with several years of experience under their belts, if possible. But if what you are trying to do simply can't be done with well-established software and using this new stuff may solve a key problem for you, then take a chance on it.

Another land mine buried in the software vendor community these days comes labeled with the words "object-oriented." Like client/server, the notion of object orientation is so hot that no software developer dares to ignore the 'O' word.

Vendors that are hedging their bets will say their technology is "object-based" or "object-like" — though that doesn't mean much because there is no consistent definition of object orientation. What users should look for from object orientation is flexibility, speed of development and the ability to reuse or link components of software without additional programming.

The bottom line is this: Ask as many questions as possible about the flexibility of the tools and how they make application creation easier. Remember that vendors are not going to acknowledge problems or point out product deficiencies unless you ask.

When vendors talk in extremely technical terms (a ploy sometimes used to intimidate you), make them translate until you do understand what they are saying. Then talk to other customers with experience using the product and, when possible, visit some of those companies to see the software in action. ■



JUDITH HURWITZ

Hurwitz is president of Hurwitz Consulting Group, Inc., a Watertown, Mass., consulting firm. She can be reached on the Internet at hurwitz@world.std.com.

My advice is to purchase a product that already has more than three customers with experience under their belts.

Technology Training From The Top Down

When companies begin training staffers for client/server with classes on how to use specific development tools, the effect is akin to "building a house starting with the plumbing," says F. Champe Granger, a senior analyst at the Federal Reserve Bank in Richmond, Va.

"The most experienced client/server managers indicate that a top-down approach should be taken when introducing mainframers to the new technology," said Granger, who recently surveyed 60 IS executives for her University of Virginia's master's thesis on client/server skills and knowledge.

"A training plan must narrow from knowledge to skill," Granger explained. "Knowledge of client/server architecture, cooperative processing, distributed database architectures, telecommunications and networks ranked as the most important knowledge base for developers to have."

Ranked as the most important skills were prototyping, PC programming and GUI design.

"A plan to educate personnel should define long-term, intermediate and short-term knowledge and skills," she said. Suggested topics for such training include the following:

- Long term (one to two years): PC and workstation use, CASE tools, data modeling and design.

- Intermediate (six months to one year): Distributed, cooperative and client/server architectures; relational technology; and Windows use.

- Short term (six months or shorter): Programming and design skills.

Tower of Babel

Large companies working diligently to maximize their newly installed client/server systems are finding that a lack of standardized distributed data dictionaries is a problem with no easy answers.

As departmental information systems groups build applications today, many of these groups do not have a core competency in data modeling, said Jeff Tash, president of Database Decisions, Inc., an information technology consultancy in Waltham, Mass.

"It is creating a Tower of Babel situation in IS," Tash said. "The No. 1 area where IS can add value is coordinating and managing data models throughout the organization."

In a manufacturing environment, for example, a data dictionary might catalog abstract representations of inventory items, thus ensuring consistency in record-keeping across the organization.

"Companies are swimming in a sea of synonyms and homonyms; different words have different meanings," Tash said. One part of an organization may be modeling data in one-to-many relationships, for example, while other parts are modeling data on many-to-many relationships.

While companies such as Sybase, Inc., Oracle Corp., Informix Corp., IBM and Digital Equipment Corp. offer some distributed data development tools, Tash said there are still few viable client/server prod-



ucts able to fill the gap left by older, proprietary data dictionaries such as IBM's Data Dictionary/Direct or Digital's CDD.

To ease the Tower of Babel problem, Tash recommended that IS managers try the following:

1. Coordinate the definition of data. If a company is using five different suppliers, then insist on one process to describe supplier definition across the organization.

2. Provide an electronic bulletin board to show which data exists and the quality of that data. This

also encourages corporate-wide data exchange, which is essential in building and maintaining data definitions.

3. Develop dual databases containing two sets of data models. One set would focus solely on production data, while the second would focus on time interval data such as aggregates and summaries.

"The second data model can provide IS with data snapshots. This is essential to spot trends," Tash said.

Dave Hudson, director at market researcher Standish Group International, Inc. in South Yarmouth, Mass., noted that "the whole issue of distributed environments has a long way to go."

Hudson defines "first-generation" client/server as one server plus several LANs. But it is in the second generation, he added, that greater levels of distribution across several server nodes will become critical to the organization. ■

Written by Sally Cusack, a free-lance writer based in Marstons Mills, Mass.

THE FIFTH WAVE



ILLUSTRATION TOP BY HAL MAYFORTH

The Changing Skill Set

Underlying the themes of client/server computing are the quick delivery of applications and the need to make the user interface attractive by using new technology on the desktop.

The shorter, more flexible life cycle of applications plus the earlier interaction with users in this new environment calls for a broadening of some skills and a replacement of others.

In a purely client/server installation, for example, there is no need for console operators because an increasing number of applications will be on-line transaction processing systems. Keeping these new application systems in step with business changes also requires different types of application programmers.

The former systems analysts from conventional data center environments — once responsible only for the care and feeding of the operating system — today must cope with middleware, back-end server programming and database administration.

One fallacy of client/server is that only front-end programmers are necessary and that a fancy graphical front end means client/server. Yet just as critical to client/server is the back-end processing, which must supply the logical and physical design of databases, monitoring and fine-tuning for better performance and tracking naming conventions.

Increasingly in demand are LAN experts, who handle tasks such as configuration management, troubleshooting and back-up and recovery functions. Also necessary to these new environments is another type of programmer: a tester of GUI programs. This new testing is different and more rigorous than Cobol program testing because most GUI programs will not have the sequential application navigation that Cobol programs do.

The ratio of programmers to testers also changes. If you have had 10 Cobol programmers and one tester for the programs in a conventional environment, you will probably need two programmers for every one tester for GUI-based applications.

A number of client/server software vendors claim a tenfold productivity increase in application development, implying that one programmer can replace the 10 you had before. This is wrong. Experience with our clients shows an increase of about twice the development productivity, not a tenfold leap.

Last but not least, the help desk has emerged as a crucial function in client/server environments. It must be staffed to provide three levels of support.

The first level of support answers very basic questions. At one company, former kindergarten teachers were hired for first-level support because of their patience in answering the same questions over and over again.

At the second level, help desk staffers should provide answers to more detailed and application-specific questions, while third-level support covers application- and technology-specific questions. In the past, vendors were called on to provide this second- and third-level support, but in today's multivendor world of client/server, it is no longer apparent who to call.

Forging strong partnerships with key vendors is one way to resolve support issues. One of our clients, frustrated in his attempts to solve a problem that involved either Windows, the database engine or the operating system, packed up the machine and sent it to one of his partners — Microsoft — saying, "Solve this and come back to us." The vendor solved it.

That kind of partnership should embody the true spirit of open systems and the client/server environment. ■



SHAKU ATRE

Atre is president of Atre Associates, Inc., a consultancy in Port Chester, N.Y., that specializes in client/server technologies.

The help desk has emerged as a crucial function in client/server environments.

The truth about

Before you decide what client/server platform is right for you, make sure you know what's true, and what's Not True.

Fact: the OS/2® client/server solution preserves your current hardware and software investment, accessing your mainframes, minis and PCs when necessary and bringing their power and capacity to the desktop level. **Fact:** the Windows NT™ solution is based on PC servers and desktops and *doesn't* embrace all your existing resources. That could mean porting applications and data. The only plus that offers is the cost of porting *plus* the cost of additional PC servers.

Fact: OS/2 2.1 runs DOS, Windows™ and more than 1,200 native OS/2 applications. With LAN Server 3.0 or Novell® NetWare®, OS/2 supports DOS, Windows, OS/2 and Mac clients. **Fact:** it's not likely NT will support all your existing applications. It won't run existing 32-bit applications like WordPerfect® 5.2 for OS/2 and Lotus® 1-2-3® for OS/2. It *will* require additional software to support DOS, OS/2 and even Windows clients. Worse yet, *Infoworld* sources



▲ All this monkeying around with NT raises lots of questions. OS/2 has the answers. report that Windows 3.x applications run 20% slower under NT than they do under OS/2 2.1!

Fact: OS/2 delivers powerful, reliable, client/server applications for data storage and retrieval (DB2/2™, Oracle 7®, InfoPump™), communications (Communications Manager/2, REMOTE OS™, TalkThru®), transaction processing (CICS, IMS Client Server/2 V2), comprehensive network management (LAN NetView®, CA-UNICENTER®,

The OS/2 ► client/server solution exploits your existing hardware and software investment. There's No Telling how much the NT solution could cost you.



Introducing
Version 2.1



client NT

Domain/DACS™, AlertView™, Foundation Manager™), and more. **Fact:** The NT strategy is still Not There, and neither are native client/server applications.

Fact: OS/2 is committed to the industry-accepted Distributed Computing Environment (DCE) standards of the Open Software Foundation.

Fact: NT is NoT.

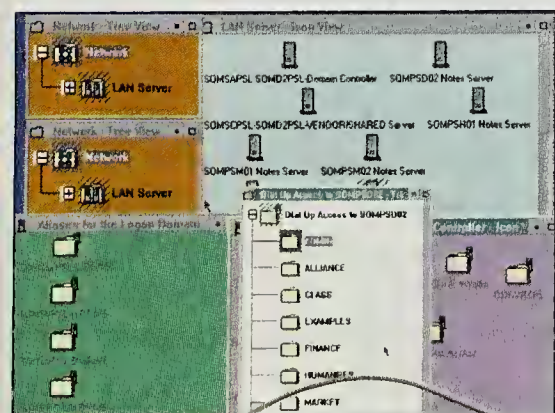
Fact: NT still Needs Time to



▲ *Who needs first-generation slipups? OS/2 is second-generation solid.*

prove itself in the real world. **Fact:** OS/2 is used by millions world-

◀ *With OS/2, it's full speed ahead for your DOS, Windows and OS/2 applications—there's no need to buy DOS and Windows.*



wide. It's the leading, second generation, 32-bit Intel®-based operating system—a more stable, more developed version of the award-winning March, 1992 release.

If you're looking for a cost-effective, secure, high function client/server solution today—Not Tomorrow—then OS/2 is for you. To order or to find out more about OS/2 2.1, call 1 800 3-IBM-OS2. In Canada, call 1 800 465-7999. OS/2 2.1 is also available at your local software dealer. And that's a fact.

Operate at a higher level.™

server.



This ad was created by LINTAS and got to this publication on time using DOS, Windows and OS/2 programs running on OS/2. IBM, OS/2 and NetView are registered trademarks and DB2/2 and "Operate at a higher level" are trademarks of International Business Machines Corporation. All other products are trademarks or registered trademarks of their respective companies. © 1993 IBM Corp.

Dear Diary

A Two-Year Journey to Downsizing

It's Oct. 15, 1993 — a hot, sunny day in central Florida — and appraiser Beccy Harding is standing in the heat in front of a house with an AST Research, Inc./Grid Systems Corp. Convertible PC. She is collecting data to determine the parcel's taxable value for the Orange County Property Appraisers (OCPA) office in Orlando, Fla.

When Harding finishes, she will touch a single icon on her Windows display, sending the information via cellular radio back to the OCPA's main database for automatic updating. If anything should go wrong at home base or if her supervisor has a question, Beccy can send and receive electronic mail in the same fashion.

At the OCPA's office, supervisor Bob Hahn is analyzing an agricultural area with the assistance of a digital aerial image system. The system displays square mile images of Orange County in 24-bit color. The images are so detailed that Hahn can view a subject property and gather informa-



Mobile computing from his laptop is one of the downsizing benefits for Eric Singleton, IS director at Florida's Orange County Property Appraisers office in Orlando

tion as if he were on-site.

Nearby, Carol Walker, manager of cadastral mapping, is busy accessing digital images of property deed documents. These document images, along with more than 1.5 million others, are stored in an optical imaging system. As with all other systems here, it is available on the network to the entire user base.

Things weren't always this wonderful. Two years ago, the information technology division and our client base were operating on an IBM 4381 and dumb terminals, costing the county \$1.8 million annually to maintain obsolete technology. Yet we increasingly felt the need for color imaging and an open architecture.

Downsizing all processing to a PC LAN environment could open the door to acquiring these new technologies at a realistic cost. But we had to create our own road map, for there was little data available on such a large downsizing project. This is an account of that 24-month journey.

BY ERIC SINGLETON

JOURNAL OF PROJECT 9000

LATE SPRING 1991

After four weeks of discussing the idea to downsize, the staff has agreed to move ahead, and top management has approved the project.

Plans are set for a network architecture, and all acquisition orders are issued for a plethora of hardware and software.

Novell, Inc.'s NetWare is purchased and certified NetWare engineers hired. When building a large microcomputer network, it pays to have the proper talent to design and support it.

Hardware and software are installed and configured. Mainframe processes are analyzed.

The completely downsized systems must do everything the mainframes did and more. Methodology for backups, version control, batch processing, CICS support, etc. has to be developed.

All new PC operations will have to be supported, too.

This massive effort is an opportunity to re-engineer the business. We will carefully study each department, asking questions such as "What does this department do? Why does it do it that way? Is the department itself even necessary?"

SUMMER 1991

Mainframe process analysis is completed. Instead of sheer duplication of these processes, improvements have to be made where possible.

Four and 8mm tape drives should be used for backups, not round reels. Cost-effective, high-speed laser printers can replace huge



Appraiser Beccy Harding records data about an Orlando, Fla., law office building on her pen-based computer

footprint, high-speed impact printers. Due to font and spatial controls possible on the laser printers, all batch reports print on 8½ by 11-in. paper instead of green-bar. Further, the reports are printed on three-hole-punch stock, so they fit neatly in three ring binders.

Software selection process is initiated. Cobol legacy systems are being converted.

Computer Associates International, Inc.'s CA-Realia is selected as the target product for the conversion. CA-Realia is able to emulate the traditional editing packages (TSO/ISPF) and CICS interfaces so that the Cobol staff does not have a monumental learning curve.

Novell's Btrieve is chosen as the database record manager.

JUNE 3

The staff is assembled today into teams for database, network, PC software and Cobol source-code conversion. Information technology manager Tom

Rebik will coordinate all of the teams, as well as assist me in directing the project.

Not only will the Cobol source code be downsized and converted, but other projects, such as optical imaging, will also have to be installed. These systems must be up and running in the same time frame in which the downsizing is completed.

JUNE 14

Each team is assigned tasks. One of the largest is the conversion of the legacy Cobol systems: More than 700 batch programs and 250 on-line programs have to be converted to work effectively under CA-Realia, our chosen compiler.

The way our office works, we have to have the new systems up and running in one year or we will have to wait an entire extra annual cycle for deployment. If we miss our launch window, the project's success will be seriously jeopardized. We also agree to terminate the use of the 4381 by a certain date.

We develop a strategy to break up the Cobol systems into conversion groups.

Each group has to be ready by a certain date because that is when the system is needed for production. We will deploy the system as it becomes ready, not after everything is converted. This is how we will bring everything in on time.

(Continued on page 16)

JULY 31

The first significant batch jobstream is converted! But the job that used to run for one hour on the 4381 mainframe now runs for more than 10 hours on the 486 batch server. Fear strikes us. Several months into the project and our first real conversion has yielded terrible performance. Should we stop now and save our careers?

AUGUST 22

Solution found! By running the batch jobstreams on a separate server and installing a fiber-optic backbone between the batch and database servers, run times decrease to 25 minutes. Faster than the mainframe!

FALL 1991

A staff member resigns, convinced the process will never work and that mainframes are the only future. . . .

The remaining staff members are largely computer science majors with several years of ex-

SEVERAL MONTHS INTO THE PROJECT,
AND OUR FIRST REAL CONVERSION HAS
YIELDED TERRIBLE PERFORMANCE.
SHOULD WE STOP NOW & SAVE OUR CAREERS?

perience and confidence enough to conquer the world. I don't expect any more resignations.

The conversion process is honed so each program is run on the mainframe, converted and run again on the PC. Then results are compared, and the next program is processed.

A key step in this conversion process is testing against duplicated database management systems on the mainframe and PC database server. With this technique, we are guaranteed to find both accuracies and inaccuracies.

Fiber-optic cabling is introduced to the network architecture, where a backbone among all servers greatly increases data-sharing performance.

We want a large data highway among servers, and Thomas Conrad Corp. systems are chosen to achieve the bandwidth necessary to satisfy our existing need and yet still leave room for expansion.

OCTOBER 28

A document imaging system is brought on-line by the PC software team. Our parallel development/deployment process allows us to install, test and release the product, write documentation and train end users on the system during legacy systems conversion.

Hewlett-Packard Co. optical-disc jukeboxes are installed to increase storage capacity of images.

NOVEMBER 8

Digital aerial imagery is discussed as a new concept that would allow end users to study property parcels from their desktops rather than from the field.

We now have the network to support the very systems that were unaffordable or unavailable on the mainframe.

Ground-level imagery is discussed as a supplement for the aerial imagery system.

Strategies for a low-cost pilot are developed.

DEC. 10

The first critical group of Cobol programs is converted!

After banging our heads against the wall working out the

This aerial photo showing digital imagery of Winter Park, Fla., can now be called up at an appraiser's desktop



kinks, the second group goes much faster.

The information technology staffers ask me how they are doing with the timeline dates on Cobol program conversion. They are on schedule, but barely. (The day comes later when I have the joy of telling them they are finishing four months ahead of schedule.)

WINTER 91-92

The development testing team reports less than adequate performance of on-line CICS modules.

The current configuration creates very heavy network traffic, which can slow down performance of the application systems considerably. The solution? We create a 3M-byte RAM disk on each client node and download all appropriate CICS modules to an individual user's machine during login.

A system is built that reads the Novell ID of the user and loads only those modules necessary for them to sign on. All other systems are accessible via Windows.

Now, network traffic is low, and screen-to-screen response time is blazingly fast.

FEBRUARY 3

Design starts today on the aerial and ground-level imaging system.

Aerial and ground-level imaging are implemented as a pilot system and proved technology, respectively. The projects occur in parallel with the downsizing, but after being developed, both are put on hold by top management.

SPRING 1992

A LAN interface to the wide-area county network is planned and executed. Meanwhile, a TCP/IP gateway is put into place and tested, performing very well.

One advantage to this expansion

On-line digital images of property let appraisers perform various analyses that were previously impossible

is accessibility for PC users to the countywide geographic information system (GIS), which is almost completed. But to use the GIS, a high-powered, expensive (\$30,000) system is necessary.

I'm considering the possibility of working with the GIS software vendor, Geovision, Inc., to assist us in writing a PC version of its software. If such a system can be developed, hundreds of existing PC network users will be able to access the GIS.

APRIL 31

In San Antonio at a Geovision conference, I reach a verbal agreement with Doug Seaborn, president of Geovision. Work will start on a co-development project that eventually produces Vision Query, the PC platform Geovision product.

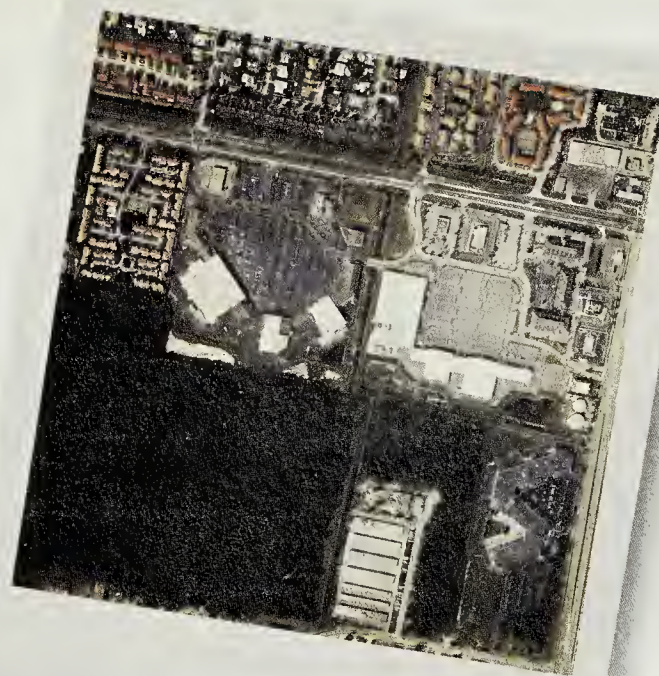
MAY 7

The document imaging systems that are on-line and in production are beginning to show signs of performance problems. We begin thinking long-term about the projected life of the product at our site. (Eventually, we do move ahead with a new system.)

SUMMER 1992

Land ho! The conversion of the Cobol legacy systems is completed and tested. We are ready to start running our annual processing jobs, the calculation of more than \$33 billion in property value.

Although the system has been tested to the nth degree, top manage-



ment wants to keep the mainframe as a backup throughout the season in case "anything goes wrong."

Vision Query Release 1.0 begins testing at our site. The product shows extreme promise.

FALL 1992

Election season, and this is an elective office. Our chief executive officer is the elected official, and the race is on. . . .

The 4381 mainframe system has officially been shut down, as annual cycle processing ends in October.

Processing on the new downsized systems is a success.

NOVEMBER 3

The document imaging systems are stable, but we hunger for higher performance to keep up with rapid scanning of documents. So we start searching for a new document image system.

WINTER 92-93

Richard Crotty, newly elected property appraiser, takes office. Crotty decides to immediately move ahead with aerial and ground-level imaging, giving new life to the projects.

(Continued on page 18)

(Continued from page 17)

He also asks about the possibilities of gathering data in the field with portables. This initial discussion leads to the development of "Project Field Link."

SPRING 1993

Hired Alan Mariotti, enterprisewide NetWare engineer — one of the few certified NetWare experts in the state and a consultant to our project.

As the network grows and application systems increase, we pay closer attention to education and training.

Our training budget is usually set at 5% to 10% of the overall information technology budget. During the downsizing, this figure was at the high end due to the flood of new technologies the staff had to learn.

Our strategy is to have a key non-information technology staffer in each department, a "super user" supporting the others in his department. This person's skill set falls between an information technology staffer and an end user who has knowledge of how to use a system.

APRIL 14

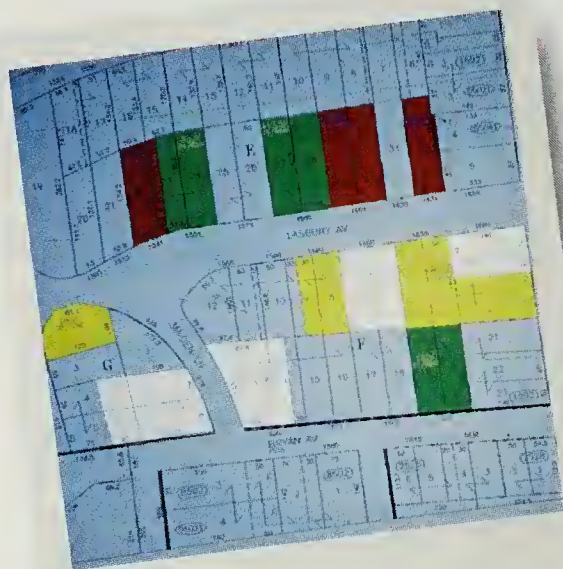
Aerial imaging systems are fully in production. Stored on optical discs accessible on the network via the HP jukeboxes are 910 square miles of 24-bit color images. Other agencies have started to visit, each with an interest in our new technology.

The Orange County Sheriff's department and the Environmental Protection Agency (EPA) both visit. The EPA was interested in how such a system could be used to identify tree types at the desktop. In a matter of seconds, a few dying trees are located in a square mile of living ones.

In addition to using the technology for similar studies of trees and shrubs, the Sheriff's department could zoom in on top of houses and study their positions if they are planning an unannounced visit.



FINANCIALLY,
WE HAVE COME
OUT AHEAD...



Geovision, Inc.'s PC-based software shows how property parcels can be color-coded to display attributes such as comparable sales value

EARLY SUMMER 93

Work begins on Project Field Link. We have designed a system that will take advantage of pen-based computing, Windows and new advances in cellular radio networks. Testing of components of the system has already begun, and the test results shape our strategy.

Development is occurring in very fast strides as the flexibility of open systems is increasingly felt by the staff.

Object-oriented programming systems have cut into the world of new system development in Cobol. Visual C++, Visual Basic and CA-Clipper have joined the ranks as our key development tools.

LATE SUMMER 93

The annual cycle repeats, and Tom Rebik prepares to guide the support team through another assessment season. Ground-level imaging is brought into production, as field personnel armed with still-frame video cameras take pictures that are converted to digital images.

TODAY -

Project Field Link has become a reality. Fifty AST Research/Grid Systems Convertible pen units allow data gathering from the field, where property appraisers stand in front of the subject property.

A quick touch of pen to screen and data is transmitted live to the production data files on the home system.

Financially, we have come out far ahead. Our first year realized an \$800,000 reduction from a budget of \$1.8 million. Subsequently, we have seen other dramatic gains as we have applied our in-house knowledge and used the tools on hand to build new systems.

Project Field Link will reduce the overall budget by more than its cost in the first year of operation. There are many examples like it.

The user community has adapted amazingly well to such rapid deployment of multiple technologies. As I watch a client using our products under Windows on a 17-in. display, I realize that for the client, it had to be all or nothing.

Technology is unforgiving, and we have learned that in order to instill positive change so quickly on our client base, we have to relentlessly educate ourselves to not only keep up but also look ahead. ■

Singleton is the IS director for the Orange County Property Appraisers office in Orlando, Fla. He can be reached through his CompuServe ID at 72274,3110 or via the Internet at 72274.3110@compuserve.com.

Prime-time Client/Server

Interactive TV brings high tech to living rooms *By Ted Krum*

Systems vendors portray client/server technology as a tool for re-engineering customers' businesses, but applications now under development may do far more: They may decimate entire industries.

The nation's leading computer and communications companies are building prototype interactive television networks that will provide flexible entertainment and retail services directly to consumers. These networks will bypass the normal channels such as chain stores or catalogs.

The first systems coming on-line at year's end, for example, will allow cable TV subscribers to view popular movies any time they choose. Customers will simply use their remote controls to order films from server clusters run by their local cable or phone company. This new capability usurps video stores' business.

"By late '96, the top 50% of cable businesses will be running 50% of their traffic through fiber optics," said Ray Katz, who covers the cable industry for Lehman Brothers, Inc. in New York. "That will be enough [for interactive services] to have a significant impact on the bottom line."

For one of the first interactive TV networks, Time Warner, Inc., the nation's No. 2 cable operator, is equipping 4,000 homes in Orlando, Fla., with cable boxes designed by Silicon Graphics, Inc. (SGI) and built by Scientific-Atlanta, Inc. in Norcross, Ga.

"There's no way to tell right now what consumer demand for these services will be," said Robert Clark, director of media servers at SGI. "The electronic superhighway is be-

ing pushed by entertainment and consumer products companies that want to cut their distribution costs and retain a bigger share of the customer's dollar."

Katz's late 1996 milestone falls within these planning horizons.

STILL WARY OF FUTURE

Yet Clark discussed the future cautiously. "Even after we turn on the switch in Florida this year, marketable solutions for consumers will still be at least two years away," he noted.

Clark said that although the cable companies "are giving us a cost ceiling of \$300 per unit" for the cable boxes, they will have the processing power of a midrange box, complete with a RISC microprocessor, a few megabytes of RAM and special hardware for security, video compression and three-dimensional graphics.

Other technology companies, including Intel Corp., Microsoft Corp., Hewlett-Packard Co. and Motorola, Inc., are developing similar offerings with an eye to someday placing their products in every household. Video game companies such as Sega International and 3DO Co. are developing interactive TV products to hedge the potential threat to their businesses.

Despite all the untried technology at work in interactive cable systems, some of the greatest risks fall outside the engineering realm.

"Businesses will use this infrastructure for high-speed networking and to reduce their phone bills by bypassing the local phone company," Katz noted. ▀

Krum, based in Stamford, Conn., conducts independent research and consulting on computer graphics.



The interactive TV screen in this mock-up image displays one type of interface

CONFUSION REIGNS OVER COSE

Can four fierce rivals overcome the perennial politics of the Unix business?



BY FRANK HAYES

Eight months after its launch, the Common Open Software Environment (COSE) is shaping up as a technical success — but a marketing fiasco.

The project by IBM, Hewlett-Packard Co., SunSoft, Inc. and Novell, Inc.'s Unix System Group to create a standard Unix platform may be well on its way to official acceptance by the X/Open Co., an international standards consortium. But users said they still have not figured out exactly what COSE is or how it is likely to help them build client/server environments.

"Even today, none of the vendors I talk to have even heard of COSE," said Gail Levesque, manager of special projects at Monadnock Paper Mills, Inc. in Bennington, N.H. "Whoever is driving COSE, they've got to be able to articulate the benefits."

Jim White, vice president of technology planning at Charles Schwab & Co. in San Francisco, agreed. "There's a lot of confusion out there," he said. "A lot of people are beginning to look to X/Open [for standards]. Some clarity would be nice."

EMPTY PROMISES

The confusion is hardly surprising. Since 1987, users have endured a deluge of Unix "unification" plans from AT&T, the Open Software Foundation (OSF), Unix International and the ill-fated Advanced Computing Environment, or ACE. All of them promised standardized user interfaces, uniform systems management and common programming interfaces. None of them delivered.

Then COSE made its debut last March, with all of the industry's leaders united under a single banner to jointly develop a common Unix "environment" spanning not only the desktop but also eventually networking, graphics, object technology and systems management.

"It's the right time, the right circumstances," said Rikki Kirzner, a principal analyst at Dataquest, Inc. "And let's give credit where it's due

— this wouldn't have happened without Microsoft."

The competitive threat of Microsoft Corp.'s Windows NT operating system, released in August, is seen by many as the true driving force behind the development of COSE's Common Desktop Environment (CDE). This "common Unix dashboard" promises to integrate a melange of existing products and services, such as the OSF/Motif graphical user interface and SunSoft's ToolTalk software, to produce a user interface that looks and feels the same across various workstation platforms.

Integral to the entire effort is X/Open, which is pumping up its public presence on several fronts.

Last month, Novell handed over the Unix brand name to X/Open in a

highly publicized move that makes X/Open the official referee for industry-standard versions of Unix. In September, X/Open was tapped by a group of 75 Unix vendors to shepherd into standardization a comprehensive set of more than 1,000 Unix application programming interfaces (API). The common API effort is intended to eliminate the incompatibilities among multiple Unix variants.

For their part, users seem confident X/Open can carry off its increasingly high-profile role. "There are a lot of high hopes, and X/Open has probably done a more complete job than anybody to date," White said.

Alan Dickman, a member of the technical staff at Bell Communications Research in Piscataway, N.J., agreed. "X/Open is up to supporting it. It's up to the vendors to decide if this is worth it to them."

STATS

NAME: X/Open Co.

FOUNDED: In 1984 by Bull HN Information Systems, Inc., ICL, Siemens AG, Olivetti and Nixdorf.

MEMBERSHIP: Fourteen "shareholder" companies that pay \$500,000, along with 13 system vendors and 27 independent software vendors that pay \$15,000 to join X/Open's Independent Software Vendor Council. Vendors pay an additional \$25,000 to participate in the CDE working group.

Users comprise 58% of X/Open. The 77 end-user companies each pay \$22,500 to join the user council.

MISSION: Began in 1984 as an organization of European computer system vendors, focusing on practical requirements for open systems. A U.S. office opened in 1987. In 1989, the mission broadened with the launch of its first "Xtra" user requirements survey to help vendor members determine customer needs.

Promotes the X/Open Portability Guide (XPG), a set of open systems specifications for widely used standards such as SQL, Cobol, C and X Window System. Also tests and brands products for XPG compliance. To date, more than 800 products are X/Open-branded.

COSE POLITICS

The potential trouble for the COSE vendors lies in getting four fiercely competitive companies to work together — and to do so without a legal safety net. So far, there is no overall cross-licensing agreement formally tying the firms together for COSE development. Instead, the vendors are relying on individual licensing agreements for the technologies involved.

"Clearly, there's a potential for it not to work," observed Ed Hoerner, director of infrastructure implementation and planning at GTE Telephone Operations in Irving, Texas, and a longtime open systems advocate. "If one of these companies gets mad at the others, the whole thing could fall apart."

"Are we bitching and moaning at each other? The answer is yes," said Michael Sears, director of the program office at SunSoft. "Are we getting things done? The answer is also yes. We're meeting and talking all the time. A couple hundred thousand pounds of jet fuel have been expended on this 'virtual corporation.'"

(Continued on page 24)



IBM is a registered trademark and Time and Place/2 is a trademark of International Business Machines Corporation. Lotus Notes is a registered trademark of Lotus Development Corporation. cc:Mail is a trademark of cc:Mail Inc., a wholly-owned subsidiary of Lotus Development Corporation. ©1993 IBM Corp.



ANYONE CAN SELL YOU THE PIECES. WE'LL MAKE IT FLY.

A piece here, a piece there. All too often, that's how company-wide software integration arrives. With no instructions, no help and no clear idea of what the thing should look like when it's done.

You need a plan, and IBM can help. With client/server software that will help you rightsize, streamline and transform your company as quickly or as gradually as you need. With LAN workgroup products that bring your people together, like IBM Time and Place/2™ and Lotus Notes® and ce:Mail.™ With software like our new connectivity programs that can unite your LAN and host users. And we provide the consulting, training and services to make sure everything works as well as you hope. LAN to LAN or host to LAN, nobody puts the pieces together like IBM.

Want to automate your sales force? Improve your customer service? Speed your product development? There's never been a better time to call 1 800 IBM-CALL, dept. 142, for more information on our client/server workgroup solutions. We'll show you where all the pieces go. And then stay around and help you get it off the ground.

SOFTWARE FOR BUSINESS INTEGRATION



(Continued from page 21)

To speed along the standards process, the COSE players made sure X/Open would use its "fast track" process to consider the COSE specifications and to create a testing and branding program as well (see story below).

At X/Open, a newly created topic group called the Desktop Working Group is handling the formal CDE specification. This desktop group, plus an X/Open "requirements topic group," began meeting in July to feed recommendations to the COSE sponsors and prepare for the finished specification's delivery in December.

Even more significantly, the plan to implement the new COSE specifications reverses the usual process for developing standards. The COSE projects are being jointly developed behind closed doors by IBM, HP, SunSoft and Novell. Only after the four firms have created their products will they extract the common

specifications to submit to X/Open.

That reversed approach has prompted suspicions that X/Open's fast track is simply a way of railroad-ing the COSE products through the standards process.

"The fast track process is not used a lot," said Hal Wilson, vice president at systems integrator PRC and the person who sponsored the proposal to fast track CDE before the X/Open User Council. "There was concern among the membership: Exactly what are we buying into here? Will we lose our objectivity?"

The COSE sponsors have vowed to abide by any product changes required by X/Open, but a mantle of silence over the group's work has effectively kept both users and other vendors in the dark.

Meanwhile, technical work on COSE has been moving steadily forward, the sponsoring companies said. In June, they issued a 117-page

"functional specification" for CDE. That spec describes a single set of source code for all four primary platforms: SunSoft's Solaris, HP's HP/UX, IBM's AIX and Novell's Unix System V Release 4.2.

The X/Open membership — comprising dozens of system and software vendors plus user companies — will vote on that initial CDE specification next month at a conference in Rome. Still undecided, however, is exactly how CDE will be offered as a product when it finally hits the market in mid- to late 1994.

UP AND RUNNING

Yet despite the confusion surrounding COSE, most users said they still like what they have heard — at least as a first step.

"This provides a solid baseline," said Jonathan Vaughan, vice president at The Chase Manhattan Bank NA in New York. "However, other than for purely desktop products, the APIs are just a starting point.

In an enterprise environment, you're really going to have to go to the next level with things like security services, naming services and management facilities. It's not clear how that will be resolved."

"It doesn't help us at all to have multiple standards," added Kevin Reilly, vice president of information systems at Richardson Electronics in suburban Chicago. "We're not moving to Unix because the vendors have told us how great it is; we're moving to Unix because we know we need distributed systems and interoperability."

But handling those complexities requires disposing of the incompatibilities among Unix platforms, Kirzner noted. "The quicker you force the operating system into being a commodity, the quicker you can move up to the next level," she said. ■

Hayes is a Portland, Ore.-based freelance writer who specializes in Unix and open systems. His Internet address is frankhayes@bix.com.

ON THE FAST TRACK

X/Open's fast track process is similar to the organization's normal standards process — but with the front end sawed off.

Ordinarily, a technical working group composed of X/Open vendor members spends two years or more developing and revising a specification. Vendors can examine draft after draft of the proposed specification before it is submitted to the X/Open membership for a vote.

But in the fast track process, the proposal's sponsor must do most of the development work on the specification. The X/Open working group's effort is largely limited to accepting or rejecting a finished proposal. If a spec is not up to snuff, it is returned to the developers for more work.

"The fast track process will only work as well as the quality of the specification," said Alan Dickman, a member of the technical staff at Bell Communications Research who has worked on past X/Open specs. In addition, Dickman said, a fast track spec "needs considerable industry support behind it," as it must still pass the same number of votes as a conventional X/Open standard.

For X/Open, fast-tracking has the advantage of the sponsoring vendors footing the bill for developing the specification. For sponsoring vendors, fast-tracking may cut the time a proposal spends in a working group to a few months "if everything is perfect," according to X/Open spokesman Jeff Hansen.

However, fast-tracking carries no guarantee. The OSF's DCE, which was returned to developers for additional work, will spend a year in the process. If all goes well, COSE's desktop environment specification will be up for a vote next month and could emerge ready for approval by April. Then X/Open-branded products might be available by mid- to late 1994.



Living with the Legacy

The essence of client/server computing is the strategy of distributing computations and data over multiple computers. One of the key challenges is initiating a distributed computation over distributed data while ensuring the integrity of the result.

The need for distributed transaction control is evident in financial management systems, which must ensure that no expenditure is approved without available funds. Other types of systems (scheduling, parts inventory, order fulfillment, etc.) have similar situations in which they have to keep balances consistent across two different subsystems or databases.

The system software that provides this capability — the “transaction processing monitor system” or TPMS — has been used in mainframe shops for more than 20 years.

Now, TPMSs are making their debut in client/server environments to solve the same problems.

For example, IBM, whose CICS is synonymous with mainframe transaction processing, now has versions of CICS for OS/2 and AIX. Hewlett-Packard is implementing CICS under HP/UX, and IBM is even producing a Microsoft Windows NT version.

A recent market research survey by International Data Corp. projects that CICS will control 60% of the TPMS market for the foreseeable future — in both client/server and mainframe environments.

And why not? The characteristics of CICS are well-understood. There are more trained CICS programmers by an order of magnitude than for any other TPMS. CICS will likely provide the most robust way of integrating mainframes into the distributed client/server environment —

something that most large organizations want to do.

However, a transaction processing monitor is not the only way to ensure the integrity of distributed computations and data.

Vendors of client/server database management systems are developing their own solutions, providing two-phase commit processing, data replication control and a variety of approaches to include both network- and mainframe-based data in the solution.

Many applications don't require true simultaneous updates (such as a bank credit-card application might) but can deal with databases that get back into synchronization within a few seconds or minutes.

Sybase has been emphasizing the use of its new Replication Server in these cases, claiming they are far more common than those requiring true two-phase commit. Oracle and Sybase also offer capabilities for database two-phase commit, allowing the implementation of large systems with the database split across multiple servers. A good example is a banking system that keeps certain customer files on servers at each branch.

The ideas of two-phase commit and replication processing have also been around for a long time. What is new, of course, is the technology for downsizing and client/server. The fight is shaping up in the space where CICS is moving down and the newer entrants are moving up.

Today's software systems for ensuring distributed transactions are still based on a procedural programming model. But object-based systems will also have to deal with these issues.

Once these systems are able to ensure the integrity of messages passed over a network, we will truly have a contender to unseat CICS from its throne. ■



JERROLD GROCHOW

Grochow is vice president and chief technology officer of American Management Systems, Inc. in Reston, Va.

CICS will likely provide the most robust way of integrating mainframes into the distributed client/server environment.

Helene Curtis' Joyce Young (seated)
and Maria Borzych put a powerful
decision support system at the
fingertips of sales reps



MAKING WAVES

at Helene Curtis

Daily access to constantly updated customer and product information allows sales reps to react to market changes faster



Twas nearly the night before Christmas five years ago, and Joyce Young was despairing over her first client/server project.

The director of decision support systems at Helene Curtis Industries, Inc. in Chicago had just given 20 salespeople the pilot version of what later became a very successful sales automation system. She was out having a late dinner with Maria Borzych, her sales systems manager and the first employee to join Young's fledgling three-person department.

"Things were not good. We were so upset! We wondered if we'd have jobs when it was over," said Young, who can smile about it all now. "We were using all this beta stuff, and we became our own system integrators. It was awful."

Client/server computing arriv-

THE COMPANY: Helene Curtis Industries, Inc. Sales of \$1.2B in 1993 and net income of \$16.6M. Fortune 500 rank: 353. Employs 3,200 worldwide.

THE MARKET POSITION: Ranks No. 1 in U.S. in sales of hair conditioner and mousse/gels and No. 2 in shampoos, behind Procter & Gamble Co.

THE KEY COMPETITORS: Procter & Gamble, Unilever, Alberto-Culver Co., Gillette Co.

THE PRODUCTS: Suave, Finesse, Salon Selectives and Vibrance shampoos and conditioners. Degree antiperspirant. Quantum permanent wave and other salon products.

ed at Helene Curtis Industries not with a bang but a whisper — and long before it became a fashionable buzzword.

"From the very beginning, we had a great deal of involvement with our clients, the sales force," said Young, 40, whose background includes degrees in computer science and business administration plus five years of information systems consulting for KPMG Peat Marwick. "These are very aggressive people, and I had to coalition-build. I couldn't go to them and be 'Ms. Tech Wienie IS' and be successful."

That first client/server project — a circa-1989 sales information system that gave laptop PCs to 170 direct sales representatives and managers nationwide — is scheduled for its second-generation revamp next year. A

(Continued on page 28)

PHOTOGRAPHS BY ANDY GOODWIN

BY MARYFRAN JOHNSON

Products Then and Now

In 1927, Gerald Gidwitz and Louie Stein founded the National Mineral Co. to sell mud packs to beauty salons. The company was renamed Helene Curtis, after Louie Stein's wife and son, in the late 1940s.



**Lanolin Creme Shampoo
1940s**



**Stopette Antiperspirant
1950s**



**Suave Shampoo
1950s-90s**

(Continued from page 27)

new retail information system — the second major client/server project — began rolling out last month to 150 more members of the retail sales force (see story below). This time, Young's department put pen-based AST Research, Inc./Grid Systems Corp. palmtop computers in the hands of another set of sales reps.

The decision support systems group now counts 30 staffers among Helene Curtis' 137-person Business Information Systems Division. The handful of PCs kicking around when Young joined the company in 1988 is now a network of more than 700 desktops and 21 LANs.

For this \$1.2 billion corporation, whose mainstay product lines include Suave, Finesse and Salon Selectives shampoos and conditioners,

client/server has come to mean all forms of decision support for sales, marketing and finance. "The scope that my department has is very broad; we support everything that is not part of the data center or the transaction processing systems," said Young, whose budget this year is about \$3 million of the overall \$25 million IS budget.

Success has been one of Joyce Young's personal hallmarks. Now married and the mother of a 5-year-old son, she once considered careers in dress designing or professional dance. Her first job in the computer industry was as a programmer/analyst at the now-defunct Sperry Univac Corp., where she began working with fourth-generation languages and modeling tools.

"Decision support systems were

FROM PAPERWORK TO PALMPADS

By all rights, Dan Glei should have been exhausted.

Instead, Helene Curtis' customer business development manager was elated as he plowed through a series of 14-hour days last month during the first rollout phase of sales force training on the long-awaited retail information system.

"I've never seen so many people excited about something like this," said Glei, who provides front-line, nontechnical support and acts as a liaison between sales and the decision support systems staff. "These people were clearly here to learn something they consider really important to them."

Based on AST Research/Grid palmtop computers and in-house-developed software, the new system promises to broaden the business analysis capabilities of the retail sales representatives, who serve as "our eyes and ears out in the stores," said Paul Silverman, national field sales manager at Helene Curtis.

"I really believe this gives us a competitive edge," Silverman said. "It lets us get information down to individual shipments of products, right to the retail store level."

In the past, when a new brand of shampoo or conditioner was launched, the only way to track the product's success was through written reports submitted by the roughly 150 direct sales reps spread across the country. Each representative was responsible for a territory that might include up to 250 grocery stores, mass merchandisers and convenience stores.

That paperwork, which took several weeks to process and analyze back at headquarters, covered information such as how many bottles of the new shampoo a store was stocking, its price and how well it was selling.

But in the hotly competitive consumer products market, sales reps in the '90s must be able to analyze and react to situations like business managers rather than like product suppliers.

The sales reps will be able to swiftly input product information into the palmtops and upload it each night to the national database on the Sun servers in Chicago.

"Now we can watch our distribution build almost by day, which helps us with things like when to turn on the media spending," Glei noted.

a big interest of mine from the days of the early PCs and LANs," Young noted.

The sales automation system that Young's department built at Helene Curtis gives the sales force daily access via laptops to constantly updated product and customer information that once took several weeks to assemble and distribute.

"Our system is very flexible and fluid in what data you pull up," said Paul Silverman, national field sales manager at Helene Curtis and an early evangelist for the technology. "That's a good deal of its power."

For example, a sales rep can fire up his Compaq Computer Corp. Contura SL laptop and ask for all customers with orders over \$5,000 as of yesterday. Then he can query specific product distribution information for Suave and Finesse shampoos. When he later connects — through a dial-in modem over X.25 Sprint Corp. leased lines — to the national database in Chicago, he will upload his latest information from the field and drop off requests for additional reports not included in his laptop database.

The laptops run several off-the-shelf software packages, such as WordPerfect Corp.'s WordPerfect, Lotus Development Corp.'s 1-2-3, Software Publishing Corp.'s Harvard Graphics, a Moditech Corp. electronic-mail system and Dealmaker forms software from EASI Co.

EMPOWERING BUSINESS MANAGERS

Direct and retail sales reps perform very different jobs at Helene Curtis.

Direct sales representatives — the ones with laptops — deal at higher corporate levels with the buyers for merchandisers such as Kmart Corp. Retail sales reps, on the other hand, work with individual retail store managers in the roughly 40,000 different drugstores, supermarkets and retail outlets in which customers

Client/server has come to mean all forms of decision support for sales, marketing and finance.

powers them to become business managers," said Dan Gleib, customer business development manager and a key user liaison between IS and the sales force. "They can analyze information they never had before and make better decisions because of it."

EDGE ON COMPETITION

Making better decisions is an increasingly crucial skill in the viciously competitive hair care market, in which Helene Curtis rose from relative obscurity a decade ago to become one of Procter & Gamble Co.'s most significant rivals.

"Helene Curtis has been very innovative over the years in new product creation and very persistent in reworking brands and supporting them," said Diana Temple, an analyst at Salomon Brothers, Inc. in New York. "But their U.S. sales were off by 7% in the first quarter because of inventory reductions by retailers."

"They're not doing that well right now, but I'd guess they'd be doing a little more poorly if it wasn't for their great information technology," added Andrew Shore, an analyst at Paine-Webber, Inc. in New York.

The new retail information system, which was three years in the making from inception to reality, has a "fairly near-term horizon for payback," Gleib said. "We believe this will provide us with a very distinct competitive advantage."

One quick payback from the re-

(Continued on page 30)

buy Helene Curtis products.

The new palmpad-based retail system will give sales reps an automated way to collect data, an analysis tool to measure sales productivity and more disciplined planning methods for handling accounts at the retail store level.

"This kind of technology allows us to bring information to the retail sales reps that em-

Open Systems Evolution

Open systems began emerging as a serious corporate direction for Helene Curtis in the spring of 1992.

"That's when we started a more formal dialogue around open systems," said Tom Gildea, vice president of business information services. "One reason for doing it was educational. The other was just to start the cultural process."

Gildea brought in a consultant to analyze his current computer setup — "We have everything here except Wang equipment," he noted — and then talk about the gradual process of mainframe downsizing with the 137-person IS staff.

"It surfaced a lot of angst on the part of the mainframe people," Gildea recalled. "They've spent their entire careers on this equipment, and a lot of their self-worth is tied up in being systems programmers. But the skills they have are important — and many of them are skills client/server doesn't have yet."

In March, Helene Curtis realigned into two major divisions: U.S. and international. The IS operation remained intact as a corporatewide function, responsible for both the U.S. and international domains. "Our CEO [Ron Gidwitz]'s view is that we're going to be global, and information is the key," Gildea said.

"There's a lot of good stuff available now for client/server, but you look at the product offerings and see a lot that is not there," he added. "Little fundamentals like backup, recovery, security, system management. . . ."

Gildea is making a special effort to bring the operations and technical services staffers into "this revolution for client/server" rather than merely informing them about new technology choices afterward.

"I'm trying to position them so they become experts, so when they come to the table they're prepared to render expert opinions," Gildea said. "I'm trying to elevate them to more of a partnership."

(Continued from page 29)

tail system, Young added, is that it will let the sales reps add one more store to their daily rounds — eliminating the need to hire more salespeople.

POWERFUL ANALYSIS TOOLS

The combination of daily updates from the field with syndicated market data has proved to be a powerful tool for market analysis at Helene Curtis.

When competitor Unilever introduced a new shampoo called Rave, for example, the market research department at Helene Curtis assumed it was aimed at their Salon Selectives line. But an investigation and analysis indicated that the bargain-priced Suave line was the true target.

"We were going to take down the pricing on Salon Selectives as a reaction to Rave, but the system enabled them to avoid doing something very reactive and losing money," Young recalled.

The heart and soul of the decision support operation lies within the 25G bytes of data stored in a relational database on a Teradata, Inc. system in the data center. It stores syndicated market data from A. C. Nielsen Co. about the \$20 billion personal care products industry, as well as product information from the field and internal data on logistics, promotions, sales and order entry.

From that data warehouse, infor-

mation is parceled out to a Sybase, Inc. relational database management system on several Sun Microsystems, Inc. servers and then further down to Novell, Inc. NetWare LANs, IBM-compatible PCs and the Compaq laptops.

Now facing a bill of \$400,000 to upgrade storage capacity on the Tera-data system, Helene Curtis is actively considering other options for its next wave of technology purchases. The "Three Rs" at the firm now are "rehosting, rightsizing and re-engineering," said Tom Gildea, vice president of business information services.

To identify the vendors that will become strategic partners in the future, a team of 25 IS managers and staffers recently visited several major system and software vendors. NCR Corp., Hewlett-Packard Co. and Digital Equipment Corp. all made the short list as potential partners.

"One thing we've discovered is that nobody has a complete solution out there," Gildea said. "I'm reluctant to say we're going to go to client/server everywhere because then everybody's got a hammer in their hand saying, 'This is what we're going to do,'" he added. "What I want

The 'Three Rs' at Helene Curtis are rehosting, rightsizing and re-engineering.

people to do is sit down and develop intelligent applications for the user community."

NO EASY TASK

Although client/server systems ultimately provided tangible benefits for the company, there were unnerving pitfalls in the early days — from LAN configuration crises to distributed data synchronization problems.

One big mistake Helene Curtis made with the sales information system, for example, was overzealously distributing databases to the field. "We had the actual database running on the laptops, and it was just a nightmare to support," said Borzych, sales systems manager. "Because we have very sophisticated transactions going on here and sales territories realigning, we have as many as 500 customers that could change from one territory to another. Being able to keep those databases in sync and up to date was a logistics nightmare, as well."

Moving back to a centralized national database on the Sun servers — with only the easily refreshed data distributed on the laptops — was a change the sales reps welcomed because performance improved, Borzych said. "Now if they submit a report at 11 a.m. and wait until 11:30 a.m. to pick it up, 95% of the time their reports are ready."

Aside from introducing a new type of computing to Helene Curtis users, decision support systems also pioneered a closer working relationship with users during application design.

"The crux of the success of Joyce's group is the heavy front-end involvement of users and people like me becoming part of their business," Glei said. "Joyce and her people work real hard to understand our needs and deliver on them." ■

Maryfran Johnson is editor of Computerworld Client/Server Journal.

Sales representative Susan Broadfield (right) records crucial sales and marketing information with an AST Research/ Grid palmpad computer, also pictured below



Columbia Polishes Financial Aid Image



Columbia University's Mark Olson: 'You can survive new technology. . . .

Building client/server applications is a lot like defensive driving: Getting to the destination quickly may be your goal, but you have to be prepared for some mishaps along the way.

Such is the case at Columbia University in New York, where information systems personnel are immersed in a five-year plan to re-engineer key business processes for the school's 15 colleges. They are striving to enable faster turnaround and less paper shuffling for critical activities such as admissions and financial aid.

"You can survive new technology, even bleeding-edge client/server stuff," said Mark Olson, vice president of Columbia's student financial and information services. "But be ready for some surprises."

Those surprises came in many forms, from LAN-to-host communications snags to difficulties with distributed systems management. But Columbia was prepared for the detours and wasn't afraid to call in experts to keep the project moving, Olson noted.

Among the biggest eye-openers, the IS executive said, were the complexities of developing in a heterogeneous environment that included a

mix of IBM software and hardware, Novell, Inc. NetWare LANs, an optical jukebox from Hewlett-Packard Co., a scanner from Fujitsu America, Inc. and PC clones from Dell Computer Corp.

"We found that we have to have OS/2 experts, LAN/Novell experts, Ethernet experts to get the gateway working to the IBM mainframe and so forth," Olson said. "We pushed the envelope everywhere we could."

Establishing and following "a rigorous diagnosis to track down problems" was important, Olson stressed. During testing and integration, for instance, a glitch might be traced to a scanning device. That, in turn, could mean the problem was in the front-end applications code, a communications interface, the network or the

(Continued on page 34)



BY DAVID BAUM

You are witnessing the birth of a new age.



IBM and RISC System/6000 are registered trademarks and AIX/6000, POWERstation, PowerPC, POWERserver and POWER2 are trademarks of International Business Machines Corporation. UNIX is a registered trademark of UNIX Systems Laboratories. Windows is a trademark of Microsoft Corp. Wabi is a trademark of Sun Microsystems, Inc. Macintosh is a registered trademark of Apple Computer, Inc. SPEC is a trademark of Standard Performance Evaluation Corporation. HP is a registered trademark of Hewlett-Packard Company. DEC is a trademark of Digital Equipment Corporation. © 1993 IBM Corp.

And this is the power behind it.

Meet the first PowerPC-based RISC System/6000.

It's more than an introduction. It's a revolution. The price/performance leader of UNIX® systems—IBM's RISC System/6000®—has joined forces with the most exciting chip ever created—the new PowerPC 601™—to create the POWERstation™ 250.

The 250 sets a new standard for entry performance—and price/performance. For your business, it means answers at

lightning speed, from accounting to engineering to application development. In fact, there are thousands of

proven **Applications** for the commercial-strength AIX/6000™ operating system. We're also delivering the first

complete DCE for advanced client/server solutions. And we've brought technologies like multimedia and object toolkits to the RISC domain. With

Wabi™, you'll run Windows™ applications at blinding speed. Macintosh programs too. And there's more. We're also launching **POWER2™**, the industry's most powerful RISC technology, in the new



RISC System/6000 POWERserver™ 990—deliver-

ing unprecedented processor performance. The future will see PowerPC and POWER2 technology in everything from

notebooks to supercomputers. If you're ready for a real change of pace, call 1 800 IBM-6676, ext. 669 today.

	Price	SPEC™int92	Cost/SPECint92
IBM 25T	\$9,390	62.6	\$150
HP® 715/33	\$9,990	24.7	\$404
DEC™ 300L	\$7,920	45.9	\$173
IBM 990	\$147,800	126.0	\$1,173
HP 160	\$136,530	82.0	\$1,665
DEC 4000/610	\$131,728	94.6	\$1,392

Power for a new age.



(Continued from page 31)
IBM CICS environment.

But the end result was gratifying, he added, as financial aid counselors became "30% more productive" and are now better prepared for audits.

Eight financial aid counselors at two colleges are currently using the system, and by next year, as many as 12 counselors at five colleges will rely on it.

Like other universities, Columbia's financial aid situation is a highly regulated, paper-bound and politically charged process. Yet getting answers to students quickly could sway their decision to attend a particular school — making a smoothly run financial aid system a distinct competitive edge.

The achievement of that goal, however, was encumbered by increased government regulation, a growing student population and reliance on an overworked IBM mainframe for running key programs. Work queues consisted of boxes of folders routed from one desk to another.

All in all, counselors were spending as much as 20% of their time chasing down paper, Olson estimated.

Working with consultants from American Management Systems, Inc. (AMS) in Fairfax, Va., Olson pieced together a new environment that incorporated electronic imaging of documents and a scalable system of OS/2 workstations networked to the mainframe.

Today, snapshots of documents are scanned as soon as the mail is opened, and an attached workstation sends a record to a tracking index on the mainframe. Electronic folders of the documents are maintained there, while the images are stored on optical platters in the HP jukebox.

Each night, a DB2 batch job runs on the mainframe to determine which student folders are complete. Those folders are automatically routed into the local memory of a counselor's PC, where they are queued up for review the next morning.

NO IVORY TOWERS

Columbia University's Mark Olson offered some pointers for successfully managing client/server projects:

- **Devise a scalable architecture to mitigate risk.**
- **Plan to spend extra time on communications issues such as integrating PC processes with mainframe processes.**
- **Designate an administrator to manage day-to-day system activities outside of the data center.**
- **Allow plenty of time for testing in a heterogeneous environment.**
- **Develop applications rapidly, but carefully consider the overall architecture first.**
- **Partner with vendors or consultants that are mutually invested in both the risks and the rewards.**
- **Take ownership of the tools and technology by insisting on a skills transfer to your own staff.**
- **Set up a backup plan to keep business running as usual until the new applications enter full production mode.**

Counselors view images of documents on 19-in. monitors, which also display an active window into the mainframe for accessing the DB2 tracking index and running the needs analysis program under IBM's CICS. Award letters are automatically generated.

"The new imaging system is a huge time saver," said David Charlow, associate director of student financial services. "All the tasks that used to require pulling hundreds of folders from the file cabinet — auditing, verification, needs analysis — are now handled on-line."

All in all, it took staff members about two days of intensive training to become proficient with the new system, he added.

It also took some ingenuity and patience to get all the communications links working properly, Olson said. Devising the connectivity to view mainframe processes in an active session under OS/2 Presentation Manager tied up three programmers for nearly three weeks.

"Eventually, communication parameters between the LAN and the host had to be resolved by calling in

an expert from IBM," Olson recalled.

Another problem the staff members wrestled with was how to provide adequate systems management in a decentralized setting.

"We didn't want to help the counselors save time pushing paper only to have them spend time learning to become computer technicians," said Donna Morea, a vice president at AMS who is working with Olson on the re-engineering projects. Columbia solved the problem by insisting on applications that require a minimum of babysitting and upkeep.

The university also hired an administrator to manage day-to-day system activities outside of the data center. Staff members avoided distributed data management problems by maintaining information centrally on the host.

"We don't have to worry about data ownership conflicts or synchronization problems or with mirroring data on multiple devices," Morea explained. "These issues can be a thorn in the side of some distributed applications."

Another thorny area of client/server is rapid application development. Working fast is not always conducive to the long-term goal of creating a maintainable system.

Columbia used IBM's Image and Record Management (IRM) system, an imaging system plus a set of tools for building imaging applications. IRM's rapid development methodology was used only after the architectural design had been established.

"To bring it up in one big bang would have been too risky, so we devised a way to roll out the system gradually to add LANs as we go," Olson said. "This way they could show results quickly, while tackling the distributed issues a little at a time." ■

Baum is a free-lance technology writer based in Santa Barbara, Calif. His MCI Mail address is 554-2167.

Sticker Shock!

The up-front costs of client/server can weigh down the bottom line

Any Wall Street veteran will tell you there is no such thing as wealth without risk. The same holds true for investment in information technology.

Client/server is still a rapidly evolving technology, and the cost guidelines outlined in this article should be considered rules of thumb only. But before you get swallowed up in the costs, it would be worthwhile for you to summarize the benefits of client/server computing. One is that client/server computing puts processing power where it is needed to address the business problem.

For example, consider an application for an insurance company with a complex rating process for underwriting policies. With today's processors, an underwriter can execute this application on the client side with seemingly immediate results — and no drain on the performance of other machines, which is likely to happen



in a host environment.

Another benefit is that client/server computing communicates what is happening in the business as it happens.

Let's say the same insurance underwriter is flummoxed by an exceptionally risky policy. Instead of letting days pass while a bulky file is transferred via interoffice mail, the underwriter's assessment and all related data can be communicated immediately to a special risk underwriter on the network backbone.

Many of the benefits associated with client/server arise out of these

new classes of applications. Likewise, many of the risks and costs of client/server arise from these same sources. The key to success is to develop plans and deploy people to control the risks and manage the expenses.

By 1997, the client/server integration market in the U.S. alone is expected to grow 28% to more than \$13 billion, according to G2 Research, Inc. This might suggest that companies are clamoring for client/server. But in our experience, successful organizations are seeking business applications, not client/server or new
(Continued on page 36)

BY HUGH RYAN

(Continued from page 35)

technology applications.

These demands call for new classes of applications that expand the way companies serve customers and change and manage themselves.

Take thousands of employees and put them in the path of a re-engi-

neering juggernaut. Who wins? Nobody, unless the client/server project includes significant change management efforts at the outset.

CHANGING PROCESSES AND PEOPLE

The benefits of client/server arise from changing the business process.

One frequently overlooked implication is that the business user and information systems staff must change as well. This notion should raise a red flag or two, for very few of us like to change.

In some cases, even those of us who want to change cannot keep up with technology.

One food product manufacturer I have worked with is finding that its IS staffers can write systems that re-engineer the process of food merchandising faster than they can train business users on their systems. Critical to the success of the client/server project is recognizing that the business user feels the greatest impact in a re-engineering project and therefore requires significant time to learn and adapt to new processes.

My experience shows that each business user needs one to three weeks to learn a new system that significantly changes the business process. One large system I worked on required a three-week time frame for each business user to learn the system and have time to evaluate and change it. With thousands of workers, the training costs alone were in the millions of dollars.

In this particular case, because of the number of people who were put through training, the cost to develop training materials was not large in comparison.

However, when you are dealing with more typical efforts of 10 to hundreds of business users, the cost to develop training material is often estimated at 40 to 80 hours per hour of training material.

MASSIVE TRAINING REQUIRED

The IS staff must also go through a significant skills upgrade to deal with the demands of client/server technology. New skills must be learned for new design methodologies and design for graphical user interfaces, as well as for development tools (see story page 38).

By multiplying these times by the head count in one's own shop — and taking into consideration existing skill sets — you can approximate



The UK Department of Social Security used IS to streamline benefits for its citizens

BENEFICIAL CHANGES

Large, enterprisewide projects dramatically show the need for change management. Officials at the UK Department of Social Security (DSS) knew that the quality of its service to beneficiaries was being compromised by obsolete computer systems and manual methods. In local offices, there were no computers at all.

Instead of simply implementing new information technologies, however, the department developed a new vision for delivering benefits and began to revamp the way its 80,000 civil servants do their jobs.

The long-term intent was to focus on the whole person — to move away from older methods of processing claims on a benefit-by-benefit basis. The DSS wanted to be able to display on one screen a "snapshot" of a person's history of contributions and benefits.

One project, for example, installed 2,500 microcomputers in local offices, preparing workers accustomed to manual operations for the upcoming changes. Such short-range successes generated confidence in the program's ability to deliver.

In later stages, change management played a crucial role in educating and training employees, planning the rollout, redefining jobs and establishing a single point of help. During the training period, some 1,400 staff members began the 10-day course at 32 area training centers.

The system, installed in 1989, dispatches 74,000 payments a day. The majority of benefits are distributed through 20,000 post offices in the form of booklets with six months' worth of checks that recipients cash each week. The new retirement pension system handles 99.5% of all cases automatically and is saving the British government an estimated \$1.6 billion a year.

training costs for your staff.

Be aware that this technology is progressing rapidly and requires a commitment to ongoing training. In general, plan an average of a week per person every year for skills upgrade, in addition to the core training. While each site will vary somewhat, this should provide a strawman for front-end and ongoing training costs.

A NEW TYPE OF STICKER SHOCK

Vendors often tout client/server as the faster, cheaper, easier alternative to mainframe computing. In reality, the up-front cost of building client/server systems carries with it a new type of sticker shock. New infrastructure costs, longer development time and a complex environment can result in a higher initial cost for building a client/server solution.

Client/server requires a solid infrastructure of tools, system software, hardware and network gear. With traditional environments, we have come to expect these tools to be available either as part of the operating system or as part of a selected product.

With client/server, one can buy many parts but not an integrated assembly of the infrastructure. The range of infrastructure products is very wide. For example, productivity tools for window painting may not tie into code generators. And there may not be tools to address remote printing and recovery of lost printed reports. Tools to deliver applications to a local site may not exist at all yet.

The range in infrastructure costs can be startling, even for companies in the same industry. For example, I worked with one U.S. utility that selected and used an integrated tool set to deliver the infrastructure in about 500 work days. Another utility, which chose a heterogeneous mix of hardware and system software and networking, needed 1,500 work days to develop the infrastructure.

Such a wide range indicates that delivering the infrastructure demands that attention be given to the specifics of each site and what is in place before a maiden client/server



Vendors often tout client/server as the faster, cheaper, easier alternative to mainframe computing. In reality, the up-front cost of building client/server systems carries with it a new type of sticker shock.

voyage is launched.

In our work, one of the big drivers of time in estimating costs is the number of I/Os. In a traditional environment, this would include screens and reports; with client/server, windows prevail.

Our development effort guidelines show little difference in the time required to create screens vs. windows. This might suggest that development time frames for traditional and client/server environments are similar. Yet the client/server environment has significantly more windows, and our estimates suggest that these new applications therefore take longer to build.

Workstation-based systems are built around the user, requiring more time to design and tailor. This adds longer testing time, due to more functions and options. And the new level of interaction (event, mouse move-

ment, etc.) increases the complexity of the system.

Our internal surveys of where time goes in a systems development effort show that more than 60% of the design effort is spent on testing. This includes submissions and execution of tests as well as problem analysis and revisions of approaches. In some cases, I've seen testing eat as much as 80% of the design budget.

Putting the computing where it is needed means that we can deliver more functionality and better communication among users — one of client/server's strongest benefits. But in doing more, there is more to test to ensure functions work as expected and results are delivered when and where they are needed.

The resulting benefit is that instead of a customer service system with five functions, for example, client/server might deliver 10 new functions. So the system is more useful to the business.

MULTIPLYING COMPLEXITIES

Consider that in an open systems environment, there are four or five major platforms to choose from, four or more database management system providers, five or more communications alternatives, five or six productivity environments and so on. It is easy to conclude that there can be more than 6,000 technical combinations possible for such an open environment. (I have actually seen estimates of millions of combinations.)

This is great news if you are a consultant doing product selection but wildly frustrating if you are a systems builder eager to get on with the job. The number of combinations means the selection process can be greatly drawn out.

System management adds another layer of complexity to the client/server environment.

Traditional systems came wrapped in the comfort of operating system software and complete, integrated service from the vendor. But system management for client/server, which in a first development

(Continued on page 38)

(Continued from page 37)

effort can represent 10% to 40% of the overall cost, means controlling a heterogeneous environment with multiple components.

The industry is beginning to produce partial solutions from vendors such as Computer Associates International, Inc., Hewlett-Packard Co., Sun Microsystems, Inc. and IBM. Compared with what we expect in mainframe environments, though, they are incomplete. They focus primarily on bringing up and running hardware. Capabilities such as performance reporting, failure predication and on-the-fly optimization of resources are in the early stages.

Delivering the network requires painstaking planning. Client/server systems bring about the complex problem of integrating multiple vendors of hardware systems, software and network protocols.

In general, delivering the network involves three stages: planning, designing and implementing. The planning stage should last two to three months with four to six skilled

network people. Estimating and managing network delivery costs is difficult for several reasons. Costs and effort are variable based on the site. While installation at a single, well-connected site may not be a big issue, installation at a variety of sites nationwide — or even worldwide — with multiple vendors can gobble up a major portion of development costs.

Also beware of long lead times for ordering the distributed network capabilities needed for client/server solutions, especially where running cable or wires might require approval from local regulatory bodies.

SITE SELECTION ISSUES

Client/server is taking the computer where no computer has gone before, raising the issue of site selection. My only advice here is to expect the unexpected. One very large project I worked on in Europe involved installation in buildings more than a century old. Not surprisingly, the typical 18th and 19th century architects showed very little foresight about the impact of office LANs on their building designs.

In cases like this, site upgrade and implementation can be the single largest line item in a client/server project, especially in cases where multiple sites require significant upgrade. Developing clear rollout standards is critical.

Such standards address issues such as standardized wiring and the need for uninterruptible power supplies as well as air-conditioning and potential air cleaners. For example, I worked at one site that transported loads of carbon black. In warm weather, office workers opened their win-

dows to cool off. When distributed file servers were introduced, the combination of heat from the CPUs and carbon black on the disk drives soon spurred the need for standard air-conditioning and purification.

At other sites, union rules may impose constraints on heating and/or noise, which can greatly increase the need for adequate site preparation and installation. All of this means that you might need electricians and carpenters on-site for one to three weeks — an expense in itself, not to mention the hidden cost of disrupting the work environment.

So with all of its costs and risks, why bother with client/server? Simple: It provides a fundamentally different technology that can provide dramatically new solutions. We are only beginning to tap its potential.

Utilities are investigating the possibility of arming field representatives with handheld machines that record, store and transmit field data, including video and audio. Warehouse workers tote computers that change inventory methods. Farmers armed with computers monitor the effects of new fertilizers and pesticides on their crops.

Do these new classes of solutions involve risk? Yes. Are the rewards worth the risk? Emphatically yes — when they are aligned with your organization's strategy, processes and people.

With smart planning and a firm vision of the business future, you can parlay your client/server investment into impressive gains. ▀

Ryan is a managing partner at Andersen Consulting in Chicago.



Client/server is taking the computer where no computer has gone before, raising the issue of site selection.

TRAINING TIMES

The cost of change management depends on a number of factors.

For a significant change in the business process, plan on spending two or more weeks for each business worker using the system. For information systems personnel, it generally takes three to six months for the typical IS person to become comfortable with new technology. This includes hands-on and formal training.

Here are some initial guidelines, by position, for formal training, assuming the individual knows the traditional technology:

- **Programmer: Two to four weeks of training.**
- **Designer: One to two weeks.**
- **Architect: One to two weeks.**
- **Program manager: One week focused on the differences and risks of client/server implementation.**

Just Do RAD

Reebok uses rapid application development for quick catalog creation

By Sally Cusack

While much of the high-tech world is enamored with the cheaper, better, faster promises of the client/server environment, upper management remains a tough sell in most corporations.

At Reebok International Ltd. in Stoughton, Mass., Peter W. Burrows, director of systems engineering, found that one highly effective way to approach the executive suite for funding a client/server effort is to start with a small, easy-to-manage project.

"Implementing some quick, rapid application development on a small, departmental-level system is often the easiest way to demonstrate the advantages of client/server technology," he said.

Companies do not need a large, initial capital investment to start the client/server process, Burrows said, pointing to the widespread availability of PC LANs and off-the-shelf software. Reebok has had early success in using client/server technology to produce product catalogs combining images, product and text across a PC LAN client/server environment.

Another example is in the company's customer service group, where 120 PCs on a PC LAN were approved after management liked what it saw in a demonstration of in-house-developed database software on a sin-



gle PC. "People are more apt to approve something if they can see it in action," Burrows noted. The system, used for contact management and account follow-up, subsequently grew to 120 users in four cities.

Companies do not need a large, initial capital investment to start client/server.

Rather than tackling more complex areas such as database or document management systems on their first venture into client/server, companies should start with marketing, support or sales systems, he added. Those are often the departments in which executives are already implementing several tasks for themselves on stand-alone PCs.

Since Reebok's PC LANs were already installed, cash investment was minimal and using off-the-shelf software allowed systems development to be completed in less than a day for the simplest applications, Burrows noted, and up to three months for more sophisticated projects.

Another good place for informa-

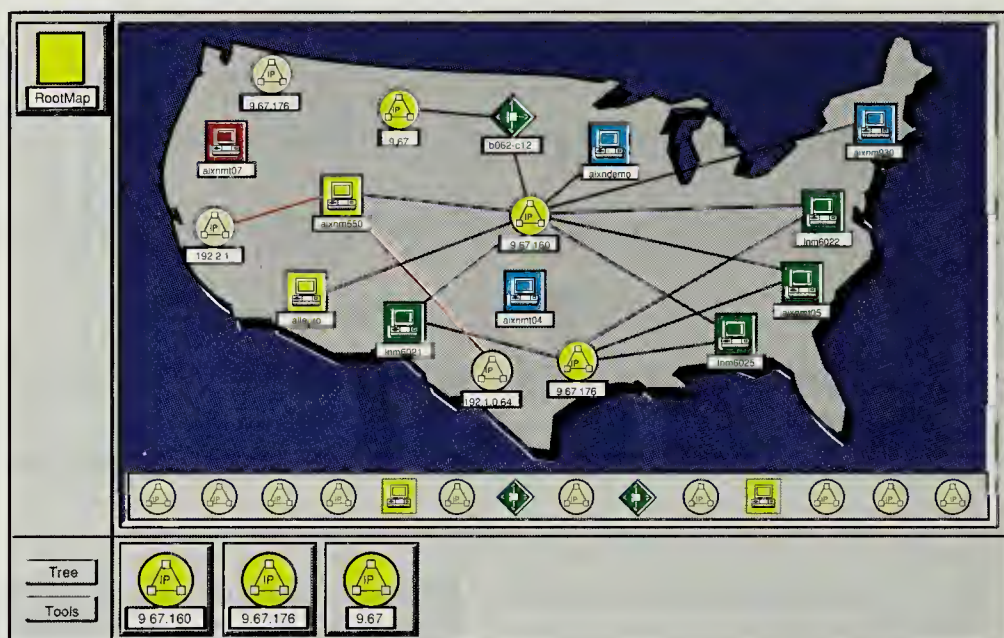
tion systems departments to experiment with client/server is in the mainframe development backlog found in any large organization. Burrows suggested that IS managers prioritize and evaluate the backlog. "One has to determine if some of the work could in fact be done on a PC or midrange platform," he said, adding that Reebok has done some reporting backlog work

using fourth-generation language products on a Unix server running Sybase, Inc.'s relational database, as well as on 486-based PC servers.

With the PC software market setting the rules for ease of use in the industry, Burrows recommended that mainframe shops give the CICS/Cobol development staff some high-performance PCs and migrate them to some of the relatively inexpensive development tools on the market, such as Micro Focus, Inc.'s Cobol, Microsoft Corp.'s Visual Basic and Powersoft Corp.'s PowerBuilder.

Two of Reebok's former Cobol programmers, for example, recently built an order transmittal application in Visual Basic, Burrows said. "Once you put the PC on someone's desk, they get the feel of the LANs and other products," he added. "As a developer, you can't get by anymore with a single language, and companies can't have a single development style when moving to client/server." ■

Cusack is a free-lance writer based in Marstons Mills, Mass.



Control,

Hapless hubs. Rogue routers. Stressed out servers. Nervous nodes. Paralyzed printers. Disappearing data. Power-crazed PC users. Budget slashing bean counters. It's enough to make a network manager's job unmanageable. But now there's a better way to regain control. To master the madness. And your own destiny.

AIX SystemView NetView/6000 V2

NetView®/6000 Version 2 is a powerful management tool ideal for client/server environments. It offers greater functionality, has an end user interface that keeps things simple, and incorporates OSF™/DME standards. It's a UNIX®-based management platform that runs on RISC System/6000® workstations with

IBM's open AIX/6000™ operating system. And it installs with just 6 clicks of a mouse. Now that's control.

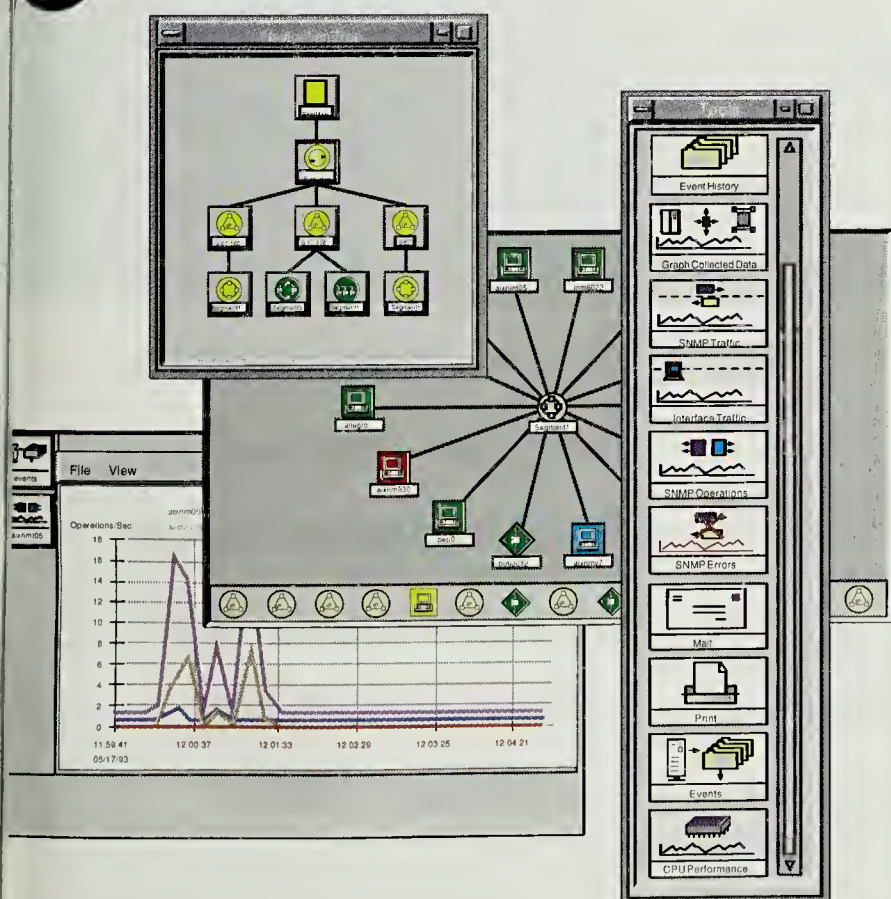
It's also just the beginning. NetView/6000 offers open topology and dynamic discovery for the automatic mapping of both IP and non-IP devices. It can natively manage SNMP, CMIP and other protocols. And it provides an easy way to set thresholds, establish filters and automate responses to events. It even collects performance data so you can analyze overall network productivity and implement preventive maintenance. That's control with power.

And speaking of power, IBM supports NetView/6000 with powerful applications like System Monitor/6000 for distributed management and

Trouble Ticket/6000 for extensive problem management. For small businesses or remote branches with 32 nodes or less, NetView/6000 Entry is an effective, low-cost solution. And NetView Service Point offers two-way communications with NetView on the host. That's control with power and flexibility.

For enhanced support and customization, IBM has established the NetView/6000 Association. This impressive list of leading hardware and software developers continually adds to the growing number of robust solutions that are rapidly helping NetView/6000 emerge as the management platform of the future. That's control with power, flexibility and support.

yourself.



These days, it's manage or be managed. Control or be controlled. NetView/6000 provides an unsurpassed combination of superior functionality and open architecture. It's a solution so sophisticated and flexible that it can manage not only your heterogeneous network, but itself as well. And that means you can take control of your own destiny.

Obviously, we can hardly control our enthusiasm. To order or for more information about NetView/6000, call 1 800 IBM-CALL, ext. 117.

NetView/6000. It may well be the perfect way to resolve all of your control issues.

IBM, AIX, SystemView, NetView and RISC System/6000 are registered trademarks and AIX/6000 is a trademark of International Business Machines Corporation. UNIX is a registered trademark of UNIX System Laboratories, Inc. OSF is a trademark of The Open Software Foundation, Inc. ©1993 IBM Corp.

NetView/6000 is a registered trademark of International Business Machines Corporation. UNIX is a registered trademark of UNIX System Laboratories, Inc. OSF is a trademark of The Open Software Foundation, Inc. ©1993 IBM Corp.

Warring Over

The CEOs of Microsoft and Sun talk about client/server strategies, NT

Bill Gates, the software mogul who elicits equal parts of envy and enmity from his rivals, has marked the client/server arena as Microsoft Corp.'s next conquest. The strategy: Windows everywhere. The weapons: Windows NT and an army of more than 2,000 third-party partners. The goal: To chase Unix from its position as server operating system of choice.

CSJ What kind of client/server strategies are you putting in place to move beyond the desktop and succeed across the enterprise?

GATES It's not just a question of Microsoft being successful in client/server. It's Microsoft and its partners — software developers and solution providers — being successful. In the solution provider area, we don't see one company being the best at all the pieces. Client/server is a growth area. We have to reach out to solution providers and make sure they understand our products.

CSJ Many corporate customers don't seem to have a clear idea what Microsoft's client/server strategy is or how they should plan for it.

GATES Our strategy is the Windows strategy: to connect Windows to all the existing systems, to get more applications and tools running on Windows. Windows NT is the industrial-strength version of Windows.

What do we recommend on the server? Windows NT. What do we recommend on the desktop? If you have applications where you decide you need the features of NT, then have NT. If you don't need those features, then Windows 3.1 requires less hardware and it's the high-volume version of Windows.

CSJ If NT is appropriate on the desktop, what about Chicago, the follow-on product to Windows 3.1?

GATES Well, NT does require more memory; it's a much richer system. Taking the worst case, when you're

Continued on page 44



“People who have learned about Unix over the years will embrace NT very rapidly because it includes all the concepts that were pioneered in Unix.”

— Bill Gates

Windows

vs. Unix and the future of Windows By Maryfran Johnson



**"I think if we all eat right
and live healthy, long lives,
we may see NT become
a usable product down
the road."**

— Scott McNealy

Scott McNealy, one of the Unix industry's most outrageous and outspoken evangelists, loves to compete almost as much as he loves to win. As the Microsoft juggernaut heads into his territory, he is mobilizing Sun Microsystems, Inc. by forging alliances with Unix competitors and preparing to run Windows applications on Unix machines.

CSJ Microsoft has a simple strategy for client/server: Windows everywhere, and NT on the server. How are Unix vendors competing with that?

MCNEALY The 32-bit distributed peer computing environment is up for grabs. Unix has a huge lead. There are more 32-bit Unix desktops and servers running businesses than any other environment. We're using the same operating system on the desktop and server. If you want to go Solaris on the server and Windows on the desktop, you can have all the interoperability, database access and the rest. You don't buy anything having Windows running on NT if it's on the server.

CSJ But Microsoft has the corporate desktop sewn up, and by putting NT on the server, there is binary compatibility up and down the organization.

MCNEALY But you run your applications on the desktop, and you run your databases on the servers. Databases run way better on Unix. Why would you want to put a PC company's operating system in as the server operating system? What you want is a company that has a history of doing network administration, system administration, security, authentication, reliability — and has a distribution channel and consulting organizations.

CSJ Microsoft intends to acquire all of that for NT, which Bill Gates talks about as a new advanced operating system architected "from the ground up."

MCNEALY I'd love Gates to go to an MIS director and say, "I've got something new for you," and watch the MIS **Continued on page 45**

PHOTOGRAPH BY EDWARD CALDWELL

Continued from page 42

running NT with all the security and running 16-bit applications, you can be as much as 15% to 20% slower than on Windows 3.1. Chicago in no way matches what we've done with NT. It doesn't come out until the second half of 1994.

CSJ *Unix systems own the midrange and server level now, and the Unix vendors are increasingly aligned to hold that ground. How is NT going to work with Unix at the server level?*

GATES Windows NT is an advanced, high-end operating system, and probably a lot of [Unix users] were waiting for a high-end operating system that could run across different hardware and was reasonably priced and had lots of applications. And here it is.

Meanwhile, we connect well into Unix systems through all the different transports and network protocols. We coexist very well.

CSJ *Unix vendors such as Sun, Hewlett-Packard Co. and IBM seem a lot more worried about Microsoft domination than about coexistence.*

GATES That's nonsense. They each push out their own source code. They each have their own APIs. Unix is not compatible from system to system. When you do standard systems, you help customers and [independent software vendors] by being rigid about what the system is — that's our NT strategy.

CSJ *The battleground seems to be shifting now from the Unix to the Windows wars, especially with Sun's Wabi technology, which will allow Unix users to run Windows at much higher performance than under older emulation methods. What impact is Wabi going to have on your business?*

GATES To software developers, the popularity of Windows is reasonably self-evident. Sun giving in to say, "Oops, if we want to sell systems, they have to have

"The question for customers is: Who has the best implementation of Windows? It's up to us to make sure we have the best."

— Bill Gates

the Windows APIs," just further strengthens the Windows message to software developers.

CSJ *The Unix vendors can argue that users won't need Windows to run the most popular desktop applications anymore. Doesn't this undermine Microsoft's unique value?*

GATES People will determine what the best ways to run Windows applications are. Operating system clones will never be able to keep up with our pace of innovation.

CSJ *Are you going to sue Sun over the Wabi technology?*

GATES Once customers have it, then we'll look at it. If they have done things in a clean way, in terms of not using our code or patents, then no, we won't sue them. If they've used some of our intellectual property, we'll look at the situation.

CSJ *Isn't it possible that the Wabi technology could reduce Microsoft's market clout, the way the chip clone vendors did with Intel Corp.?*

GATES It's very different than Intel in the sense that Intel has capacity constraints. So even if the Pentium is the best chip, if they can only make a million of them, they will choose a market-clearing price for those million chips. When we have an implementation of Windows, there are no capacity constraints. And we're very oriented toward high volume, low price.

CSJ *Sun is also attempting to force Windows into the public domain through its Public Windows Interface effort, which will be a document submitted to the X/Open Co. with all the published and unpublished Windows APIs. Why doesn't Microsoft just go to X/Open and do this on its own?*

GATES You can go buy a \$9 book at the local bookstore with that information, and all of the publishers in the world have that information already. We have all the documented calls of Windows very well-published, and we work to disseminate that information. I'm not clear what the change would be.

CSJ *How do you think the PC industry and the Unix people see the concept of open systems differently?*

GATES If open means where do you have the most hardware and software choices, then the approach Microsoft has taken in working with lots of partners is the most open. If open means the bigger committee you have, the more open you are, then things like ASCII or the Object Management Group are the most open things in the world.

Why is it that PCs outsell the most popular Unix systems 100-to-1? Remember, we outsold those systems 100-to-1 when our technology was not even comparable. So here we come. We're invading their space in terms of the power of the operating system. We're bringing lots of hardware suppliers, much lower prices for the operating system and a broad set of Windows applications into this space.

CSJ *What do you think of people referring to Microsoft as the "IBM of the '90s"?*

GATES It's not an accurate characterization because we have a whole new industry structure here where I don't think any company will be the best in every area. There's too much innovation, too much happening. ■

Continued from page 43

director shake and sweat and throw him out of his office. I want him to call it New Technology because what MIS directors want is *not* new technology. They want proved technology that can solve their problems. This is not some experimental playground to go debug a Redmond, Wash., science project.

CSJ *Microsoft's definition of openness emphasizes the sheer volume of hardware and software products clustered around Windows and eventually NT, rather than open interfaces blessed by standards consortiums. Isn't volume a more compelling argument for users?*

MCNEALY If Gates has to play in an open, competitive, multiple implementation arena, he cannot justify his market valuation. To me, openness is public domain or near-public domain interfaces with multiple, competing proprietary implementations.

Microsoft thinks they should own and control where the brake pedal goes and that there should be only one kind of oil in the world. The world will reject that. Mark my words.

CSJ *Microsoft already refers to NT as a "standardized" operating system because of the lineup of hardware and software companies supporting it. How can Unix make that claim?*

MCNEALY Standard operating system means high volume. [Gates] believes NT is standardized, but it isn't because it has nearly no unit volume. So it's a potential standard. We all assumed OS/2 was going to have volume, too. Unix today has a standardized, high-volume Unix, and it's Solaris.

CSJ *Have we replaced the Unix wars with the Windows wars?*

MCNEALY Well, what's interesting is the big flip-flop going on now, with all the Unix vendors working together and coop-

"It will take two or three years to wrest the evolution of the Windows interface away from Microsoft and put it into public management."

— *Scott McNealy*

erating through X/Open, while Microsoft and Novell are the ones at war.

CSJ *The view from Microsoft is that Sun's Wabi technology [to run Windows on Unix] tells developers that you can't sell systems without the Windows APIs.*

MCNEALY Most of our customers want to run spreadsheets and word processors as well as run their businesses on their desktops. We might as well use the Windows application floppies that are already out there. But users want to have far more capability than Windows on their desktops when they're trying to run mission-critical business applications.

CSJ *Isn't that where Windows NT weighs in?*

MCNEALY [Gates] can promise that. We're delivering. We've been doing this for years. He announced Windows in 1983, and it was only usable in about 1990-91.

CSJ *How are you going to judge the success of Wabi, which only recently began shipping?*

MCNEALY It will be a gradual thing. Wabi will be a multiyear effort that we are continually enhancing and driving and improving. We have very good development partners with Novell, IBM and SunSoft all working together to make this happen. Our resolve is immense.

CSJ *So you hope Wabi will have the impact on Microsoft's market clout that chip clones did on Intel?*

MCNEALY Bingo. We're stealing the Windows "proprietaryness" from Microsoft absolutely the way the chip clones did from Intel.

And Wabi is the worst thing that could happen to Intel. The only reason you bought a high-temperature, low-performance, expensive Intel chip over the last 10 years was to run the Microsoft applications. Wabi will bring those applications to every RISC Unix platform in the world.

CSJ *Gates says a critical, high-volume product such as Windows belongs in the hands of the one company dedicated to its innovation.*

MCNEALY Wouldn't it be great if there was only one publishing company in the industry so we knew what the truth was from one source? Well, Gates is saying, "My interface is the truth, so let's have just one source." Gimme a break.

CSJ *Assuming the COSE alliance accomplishes the creation of a common "dashboard" for Unix systems, won't the sheer volume of Windows and NT make that a small victory?*

MCNEALY No, because we will have the Wabi applications running on all X-based Unix machines. We will have the Common Desktop Environment being supported by IBM on all its Unix machines and on OS/2, and by Digital, HP, Sun, Novell and The Santa Cruz Operation. That is very significant volume.

CSJ *What do you think of the description of Microsoft as the "IBM of the '90s"?*

MCNEALY I think that Microsoft has a much brighter guy at the helm, so it's much more dangerous. ■

Keeping a Grip on User Expectations

Honest talk about client/server pitfalls can help prevent staff frustrations

Dispelling misconceptions that client/server development is a panacea for dramatically cutting costs, speeding systems into production and boosting worker productivity is among the most challenging management issues of the day.

As information systems managers tell it, too many senior business executives have been seduced by glitzy advertisements and vendor presentations that tout effortless systems integration and state-of-the-art yet easy-to-use development tools. Their unbridled enthusiasm has filtered down to end users, who have come to view a point-and-click environment as a cure-all for system ills.

Amoco Chemical Co. in Texas City, Texas, for example, is in its "very infancy with client/server," said systems development supervisor Fred Christian. "But management goes to [vendor] demonstrations and sees all of this point-and-click graphical user interface magic that's so simple and comes back and says, 'Why can't we do something like that?'"

Christian added, "Management wants things done quickly and to start reaping the benefits of client/



Sara Lee's Charlie Walter: Users don't understand real complexity behind point-and-click environments

PHOTOGRAPH BY ANDY GOODWIN

BY JULIA KING

server as soon as possible. "I have to explain that it won't be painless and that it will take 12 to 18 months to go through the transition."

Mark Factor, MIS director at Au Bon Pain, a Boston-based chain of French bakery cafes, has come up against similar misconceptions.

"Customers out in the business-
es have the perception that what they want is something as simple as a flashlight but that when IS gets hold of it, we turn it into some huge sky beam," Factor said. "There's an overall perception that client/server is something that's pretty quick, dirty and easy but gets overblown once IS gets a hold of it."

Moreover, he said, delivering applications often serves to increase expectations even more, which makes meeting those hopes a lot like taking aim at a moving target.

"The real issues with bringing client/server projects to market deal with managing expectations and controlling the scope of projects," said Paul Kanneman, an associate partner at Andersen Consulting in Dallas. "The technology is the easy part."

LOWERING EXPECTATIONS

Disparities between expectations and reality usually begin with cost reductions, which average 15% to 20% — not the 30% to 40% most people want to believe, the consultant noted.

And while well-received by most early users, many of the new applications Kanneman has seen offer neither the performance nor the integrity of mainframe-based systems. Moreover, client/server applications built to give users a graphical user interface — not an unusual goal, he added — rarely yield the long-term productivity gains management hopes to achieve.

For all these reasons, early applications are guaranteed to take longer than initial expectations, frustrating everyone involved, according to both analysts and IS executives.

For IS shops, the key to narrowing the gap between expectations and

reality is to include users in client/server projects from the beginning. After that, constant and honest communication is needed between both senior management and end users, who must be reminded of the steep learning curve IS is navigating.

"Managing expectations is merely delivering what you promise," said Mickey Lutz, director of technology management at PHH Fleet America in Hunt Valley, Md. "If I were doing it all over again, the expectations I'd try to put forth would be that our first go-around [with client/server] is not going to be swell and that it will take some iterations to get it right for our environment."

In Lutz's case, it took two developers more than a year to build a client/server vehicle maintenance management application designed to operate in the company's former IBM OS/2, LAN Manager environment. But upon completion, developers discovered that the application could not adequately handle 100 users processing more than 50,000 transactions daily from a 5G-byte database.

"There were gaps in performance and stability," Lutz said. "We underestimated platform requirements, and the mix of hardware and software from multiple vendors was very difficult to manage." Overall, he added, "tuning tools are limited, and there is very little [vendor] guidance for capacity planning."

In the end, Lutz's team scrapped OS/2 and LAN Manager for Novell, Inc.'s NetWare and a Sybase, Inc. database running on Sun Microsystems, Inc. servers. Performance improved but remains less than optimal.

"Now, users call multiple-second response times lightning because of what they got initially with OS/2 and LAN Manager," Lutz noted. And forget looking to vendors for assistance,

he added. "There is no finger-pointing because vendors don't even return your phone calls. There is minimal support. The level of product support [for client/server products] is maybe 10% of what you'd get with products in the mainframe world that cost a lot more."

REALITY vs. PERCEPTION

Communication misfires can send the wrong message

IS MANAGER SAYS:

Here are prototype screens for the new marketing support applications.

USER HEARS:

The application is near completion.

IS MANAGER SAYS:

In the long run, moving to client/server should reduce our overall IS costs. In the near term, costs will go up because new hardware, software or networks are needed and IS personnel must be retrained.

USER HEARS:

Client/server computing will decrease IS costs.

IS MANAGER SAYS:

Client/server application development is an iterative process in which users design what the final application looks and feels like.

USER HEARS:

I can have anything I want.

Senior management and end users must also be made aware that the rapid application development times they have been sold on are not all that rapid, according to Charlie Walter, a senior programmer at Sara Lee Corp. in Chicago.

Using tools such as Microsoft Corp.'s Visual Basic, developers can indeed quickly create and then modify prototype application screens according to users' specifications. But what many users fail to comprehend, Walter noted, is that layer upon layer of logic to support database integrity and Windows functionality must be built beneath those screens.

"To users, it all just looks like point and click. It's very difficult to get across the true complexities," Walter said. "Once they see prototype screens, they get the impression

(Continued on page 50)

How to go client/

Now, it couldn't be easier to bring the IBM AS/400®, the midrange computer of choice, to the desktop system of your choice.

Introducing the IBM AS/400 Client Series,™ client/server software for end users and application developers. Whether you're running seven client PCs, or seven hundred, making the move to client/server computing is easy.

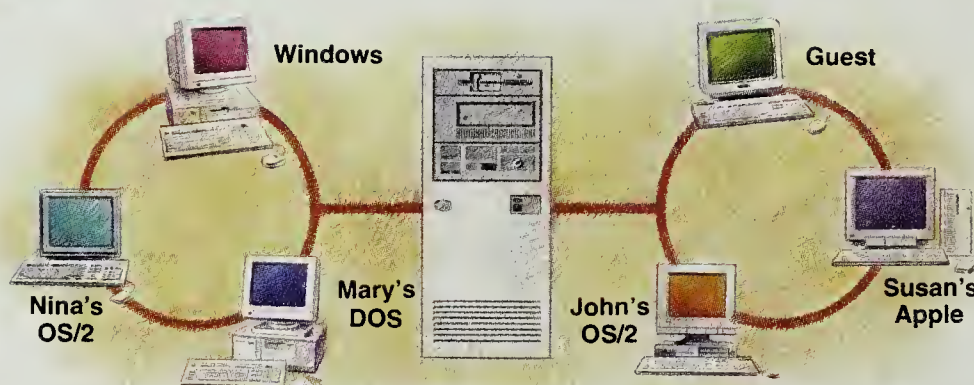
Because the software

is already preloaded and preconfigured to your specifications when you receive the AS/400 hardware.

And if you're one of the 200,000 to whom AS/400s have already been shipped, you can get a single package of software that loads right into your system. So you can concentrate on your job, not on your computer.

If you're running OS/2®, Windows®, Apple's System 7, or even good old DOS, your job will be easier. You'll be able to take advantage of programs such as Rumba/400 and SNA-ps 5250, which let you operate your business applications with a mouse. And ShowCase™ VISTA, which lets you query the AS/400's database and view the results graphically. Plus Personal AS for decision support.

If you're a developer, your job will be easier, too. You'll have popular tools, including Progress/400,™ SQL Windows® and Synon/CSG.® There's also ENVY/400® for object-oriented development, and TRACK for Executive



Whether you're working in OS/2, Windows 3.1, Apple or DOS, AS/400 Client/Server lets you get to data and applications anywhere in the network.

nano

*Source: International Data Corp. IBM, AS/400 and OS/2 are registered trademarks registered trademark of Microsoft Inc. Apple, System 7 and SNA-ps 5250 are trade-registered trademark of Gupta Corp. Synon/CSG is a registered trademark of Synon



server

Information Support, all helping you develop and run mission-critical applications from your desktop.

But you'll also get more than just the open advantages that come with client/server computing.

You'll also benefit from the advanced capabilities of the award-winning AS/400. Every AS/400

- comes with an integrated relational database, enhanced security, impressive networking

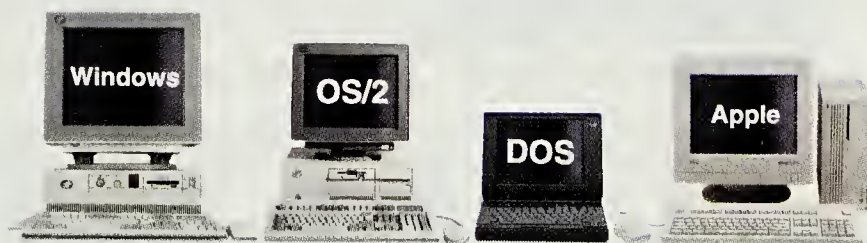
in a

capabilities and outstanding systems management. These features, combined with over 20,000 proven commercial applications, have made the AS/400 the world's most popular midrange system.

What's more, the AS/400 is very affordable, with the lowest five-year cost of ownership in its class.*

As always, you'll get superior IBM service and support, including a 24-hour hotline, to help keep the mission-critical applications your business depends on, up and running.

second.



No matter what your hardware, you'll be able to maintain all your network business connections with AS/400 Client/Server.

It's for reasons like these that successful companies such as Mannington Carpets and Louis Dreyfus Energy have already chosen the AS/400 for client/server applications.

For more details on the IBM AS/400 Client Series, call 1 800 IBM-CALL, ext. 102B.

But hurry. You're losing valuable nanoseconds.

Success isn't complicated.



(Continued from page 47)

an application is just about finished. People say, 'I have a meeting in Europe at the end of the week. Can you whip that up so I can show them?'"

Working with key users from the start, it took three developers eight months to design and construct a new application for use by Sara Lee's 150 divisions to aggregately purchase commodity items, Walter said.

While end users' expectations for the most part revolve around system performance, senior managers are concerned with costs. Here, too, honesty is the best policy, IS directors noted.

At Pacific Gas & Electric Co. (PG&E), for example, reducing costs is the goal of a multimillion-dollar client/server-based customer information system (CIS) project slated for completion by the end of 1995. By

sponsor of PG&E's CIS project is the vice president of marketing and customer service, who hand-picked the project's manager.

Equally critical to the project's success has been the participation of advisory boards comprised of business users and technical personnel.

Also, Similia said PG&E's IS group divided the project into three phases — analysis, design and construction — and has returned to senior management at the end of each phase to get a renewed commitment to the project as it stands at any particular moment.

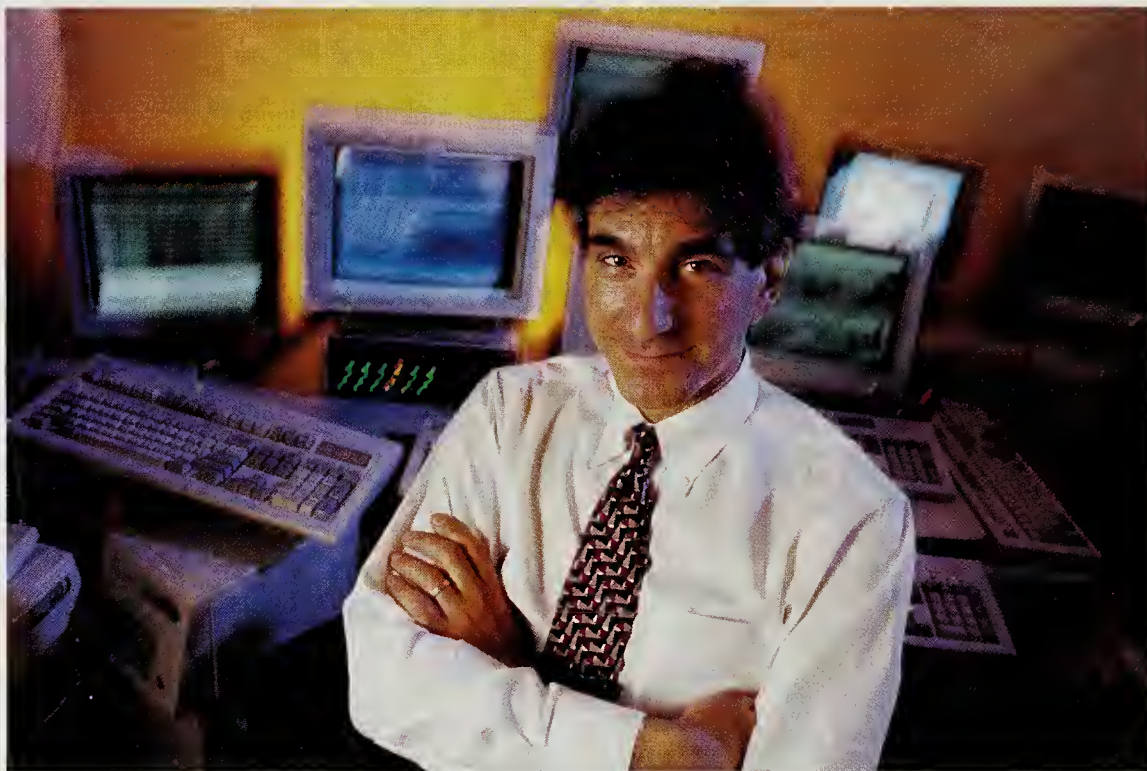
As of September, analysis and design had been completed, and IS had received authorization to proceed with construction, Similia said. "By dividing the project into phases and revisiting it each time, we're providing additional information and ensuring that senior managers have the information they need," he explained.

From an end user's perspective, PG&E customer service assistant Bob McDonald, the project's lead business analyst, said the CIS project is exceeding his expectations. "I've been in the field 27 years, and I have never before been on a project like this," he said. "I was around 22 years ago when the current system was designed, and then there was very little input from the business side. Now we hold a lot of user review board meetings, giving users a run-through of how we're designing the system."

In the final analysis, managing the expectations that crop up around client/server hinges on making it clear that the learning curve is a lot higher than you would expect and that tools are immature, said Roy Scutro, a managing partner at Ernst & Young who specializes in client/server projects in the insurance industry.

"The bottom line is it looks fairly easy when you start, but it takes a long time to get right a complex application in a truly distributed environment," Scutro said. ■

King is a free-lance writer based in Ridley Park, Pa.



PHH Fleet America's Mickey Lutz: 'Managing expectations is merely delivering what you promise'

Once the application was deployed, the company's base of "disgruntled VAX users were pleased with anything we gave them," he said. But more experienced users were disappointed with custom applications that behaved much like off-the-shelf Windows applications.

Gail McLinn, a microcomputer analyst and user of another client/server purchasing application at Sara Lee, agreed that involving users from the outset is necessary. As an experienced Macintosh user, she was "pretty specific about how I wanted the new application to work."

"But my take on the expectation thing is that programmers, generally versed in systems and programming languages, take users' requests and interpret them according to their own abilities," she explained. "And there can be quite a gap between their abilities and user requirements."

any standards, the CIS is a huge project, involving 24 major subsystems, 216 dialogs and 650 windows.

"From a performance standpoint, management wants us to provide users with the most efficient system, but not a Cadillac. It's a big concern with something this large that you're not putting any frosting on the cake," said Al Similia, manager of system construction and integration for the CIS development project.

"We've already got higher expectations for the system than we're possibly going to be able to deliver," he added. "If everybody's 'nice-to-haves' were there, we'd be building forever."

FIRM MANAGEMENT COMMITMENT

Similia said the most effective way to rein in expectations about both costs and functionality is to first secure an unfaltering commitment to the project from top management. The chief

IBM Client/Server
Office Software.

If your solution

It's the smartest thing you can run on intelligent workstations. Current-OfficeVision™ keeps your workstations in synch with the host, ensuring accurate data. It makes the host the server of choice.

Current-OfficeVision provides a graphical user interface to calendar, mail, address book, and documents. It makes everything easy, from scheduling meetings to synchronizing calendars to sending notes. And because Current-OfficeVision allows PC processing in disconnected mode, the travelling user can take his office with him.

Current-OfficeVision is the only direct connect product that offers a complete personal information manager.

it's out of date.

It helps users manipulate information for maximum productivity: project management, to-do lists, report generation, and much more.

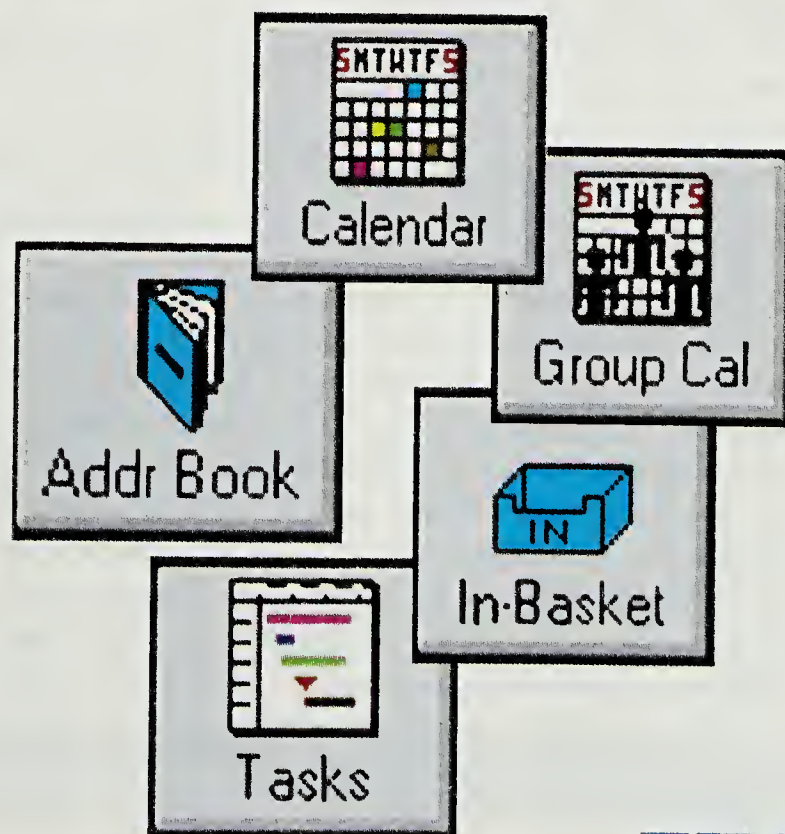
NOW!
Current-OfficeVision
Workgroup Program for
VM, MVS and AS/400.

Maximizing your investment, Current-OfficeVision provides a common interface across IBM's OfficeVision servers: MVS, VM and AS/400.® What's more, it has IBM's unmatched service and support.

Call 1 800 IBM-6676, ext. 692 for the Current-OfficeVision Information Kit, or to have an IBM representative contact you.

Once you see the advantages of going Current, everything else will be history.

Current,™





Data Centers to the Rescue!

In company after company, the people responsible for mainframe and data center computing for the past 20-odd years are being asked to tend servers out in user land.

"All of a sudden, our client community is realizing that servers require care and feeding," said Brian Brookbanks, team leader at Nova Corp., an energy and petrochemicals concern in Alberta, Canada.

"Managers in areas with servers are beginning to see, too, that they need one professional to provide IS kinds of services for every 10 or 15 workstations," Brookbanks added. "These are accountants who don't necessarily want to be IS people."

Brookbanks' group has taken on that task for a couple of end-user groups, doing backups and software

*More end-user
departments are
turning to
mainframe staffers
for help with service
and support*

upgrades, among other things.

While there is no research yet to support this trend, the anecdotal evidence is mounting. In most cases, the end-user department approaches the information systems group, although some mainframe operations types are starting to survey their user base

to find out what needs they have.

Generally, the wave starts as just a ripple with one or two departments coming to IS for help. But as word spreads, it can cause an outpouring of demand, with IS struggling to keep up. At Air Products and Chemicals, Inc. in Allentown, Pa., the data center houses 40 servers — about half of the total used companywide.

"We're installing a server every two weeks," said H. William R. Townsend, manager of computing services operations at Air Products. "We're putting bet-your-business applications on the most fragile technology available. But it will be OK because MIS will make it all right."

But the job is not as straightforward as it might appear at first blush.

End users and IS need to work

BY JOHANNA AMBROSIO

out what IS will do for them. At the same time, the data center folks must shore up their knowledge of PC software and hardware, networking and network operating systems.

Among the issues to iron out are:

- What tasks does IS take on, and what does the end-user group do?
- How will those tasks be performed? If IS handles backup, are the backup tapes stored off-site, given to the end-user group or both? If disaster strikes, does IS recover the server?
- If IS does exactly what and how it is told, who is held accountable?

"A lot of service-level negotiation has to take place," said John Osborne, manager of computer operations at Tennessee Valley Authority in Chattanooga. "Vendors are marketing directly to my end users now," he said. "Systems are showing up at my door that I didn't even know were coming. That's not a good position to be in."

James E. Spangler, computer operations manager at United Parcel Service, Inc. in Mahwah, N.J., advised, "Be straight with users. Tell them the things we can do for them and the things we don't want to do."

That was the approach Air Products took with backup. "Our policy is we don't leave the data center," Townsend said. "So we do everything remotely, or they do it themselves."

RESKILLING STAFF IS KEY

While IS professionals are educating user departments, they must also educate themselves.

"Supporting PCs is a different ball game from what they had been doing," said Len Eckhaus, president of the Association for Computer Operations Managers in Orange, Calif.

Most data center staffers also need to learn LANs so they can assist with data backup and recovery.

"LAN-developed software is the thing challenging us right now," Townsend said. "We don't develop it — the user group does — but they want us to keep the code for them after the application is done." But in most cases, these are the people who

are still supporting the mainframe legacy systems on top of new duties.

"Being a good mainframe manager, I've rightsized our operations staff," Brookbanks said. "Now we have all these 8mm manual tape devices [used to back up end-user servers] with nobody to mount the tapes."

"The past two years have been a madhouse," Osborne added. "The number of new systems coming on-line is continuing to increase, but the number of legacy systems we're supporting has not declined."

The saving grace can be that the mainframe operations have been automated to the point where someone who had been watching a console to track MVS performance, for example, can now be redeployed.

"Know thy staff," said Hampton M. Golsan Jr., an operations analyst at Abbott Laboratories in Abbott

Park, Ill. "You certainly can't afford to hire everyone you need. So take a console operator and spend \$4,000 to have him or her become a certified network engineer."

Despite the challenges, forward-looking data center managers are volunteering for duty. One reason is survival. As fewer mainframes are brought in or as more are displaced, babysitting the servers means work for at least some of the mainframers.

"Operations people need to view this as an opportunity to expand," said Arnold Farber, president of Farber/La Chance, a Richmond, Va., consulting firm. "A lot of people don't want the additional responsibility, but the smart ones will go for it." ■

Ambrosio is a Computerworld senior editor, systems & software. Her MCI Mail address is 599-8003.

MAINFRAME MAKEOVER

At the Automobile Club of Southern California, the mainframe has quite literally picked up a whole new image.

The American Automobile Association affiliate is using its IBM 3090 mainframe to host a client/server imaging application for 250 insurance adjusters at its home office in Costa Mesa.

The mainframe stores images of the paperwork related to about 550,000 auto insurance policies, as well as photos of the cars. When a new vehicle is registered or a registration is changed, a digital photo is taken and stored on mainframe-controlled optical libraries. The client workstations are mostly MS-DOS-based.

"We're using the photos now for the inspection process," said Frank Berezney, manager of technical services. "We're looking at using it for the claims area." For that to happen, however, there had to be improvements in the image quality stored and retrieved on-line, and this is just beginning to occur, he added.

This is just one example of how the mainframe is changing its stripes at customer sites around the world. But the metamorphosis of the host machine into a giant database server or file server is happening very slowly.

"The mainframe is just starting to play more of a server role," said Bob Steen, director of client/server computing at IBM's mainframe group. One way IBM will address this, he added, is to make it easier for data center staffers to manage LANs from the glass house. "I can build you a rack that will hold 100 LAN servers so you can save some space and put some organization around the servers," he noted.



Frank Berezney eyes images for claims area



What makes Wall Street
touch with the latest dynamics
currencies, commodities
strange things most of





savvy enough to always be in
of companies, industries,
and all those other
us don't understand?



PC and workstation LANs, linked to
Mainframes, what else?

To describe a brokerage as an information-intensive business is a bit of an understatement. Like certain other industries, the information *is* the business.

That's why they rely so heavily on mainframes to serve the rest of their computer network.

By being linked to a mainframe, every desktop PC and workstation—even if it's part of a LAN—has access to infinitely more information than it would have otherwise. And since for businesses like this, time literally is money, companies have come to depend on mainframes to give them access to that information instantaneously. 24 hours a day, 7 days a week.

The fact is, no matter what your business, if it

depends on information, nothing can “serve” the rest of your computer network “clients” to the degree a mainframe can. And IBM's new LAN File Services/ESA and LANRES servers make it easier than ever to give all your LANs—whether they're driven by OS/2[®] LAN Server, NetWare[®] or UNIX[®]—direct access to the enormous power of a mainframe.

Every day, information plays an increasingly vital role in the success of more and more businesses. And so do mainframes.

To receive more information on LAN File Services/ESA and LANRES, and our limited-time offer, phone 1 800 IBM-CALL, Dept. 135.



The IBM System/390[®]

IBM, OS/2 and System/390 are registered trademarks of International Business Machines Corporation. All other products are registered trademarks of their respective companies. © 1993 IBM Corp

Server Market Heats Up

New products such as Microsoft Corp.'s Windows NT promise to stoke the competitive fires at the enterprise server level — one of the few higher-margin server targets remaining. But the NT battle will be an uphill one against Unix platforms, which are firmly entrenched in both the technical and the commercial server environments.

Many sizable operations among the Fortune 1,000 have begun transforming their technology investments to support large client/server-based networks, according to a recent Dataquest, Inc. survey of 250 information systems and network management executives.

Some 85% of the executives surveyed said they use their main computer system as a server rather than as a time-sharing machine. Yet the majority of server platforms are still handling smaller groups of users (see Figure A below).

The fight for a larger

share of the Unix/Intel Corp. server market — among operating systems such as SunSoft, Inc.'s Solaris, Novell, Inc.'s UnixWare or The Santa Cruz Operation's SCO Unix — will create some interesting vendor jockeying as these companies stake their claims in the fast-growing "upsizing to Pentium processors" market.

When it comes to spending their money, server CPUs and board upgrades garnered the "highest priority for current expenditures" among the survey respondents (see Figure B), followed by shrink-wrapped application software. Tools and applications are likely to take

over in 1994 as the most pressing expenditure for the full transformation to client/server-based computing.

A majority — 76% of the 250 — reported obstacles (see Figure C) to making the move to client/server-based computing in their organizations. Software development costs topped the list of roadblocks for both system software and applications, followed by the user learning curve and other organizational issues such as training costs. ■

Written by Bradford W. Day, a principal analyst in the client/server systems group at Dataquest, Inc.

FIGURE A

Client/Server Installation Profile

(Respondent base: 250 IS and network management executives)

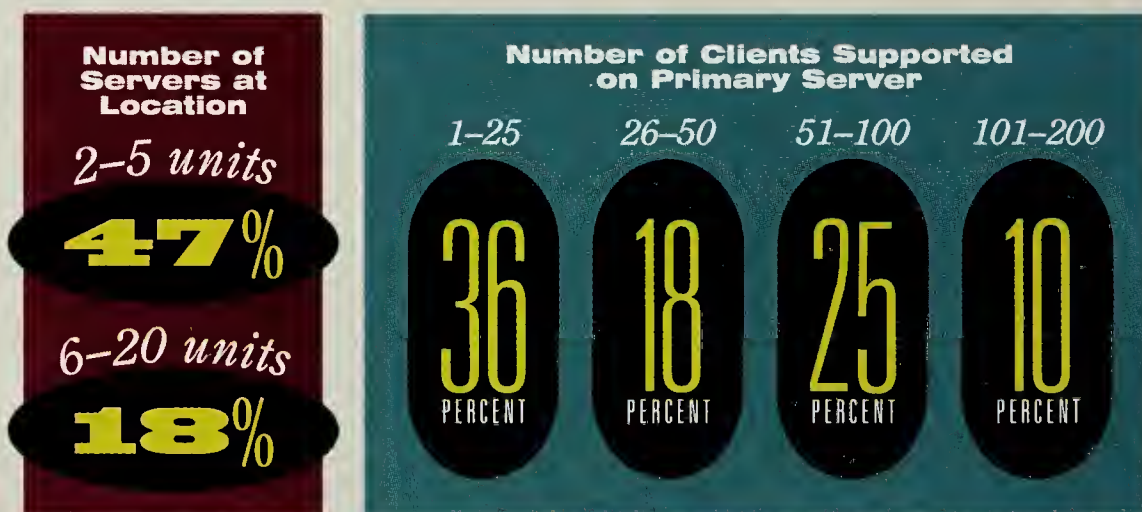


FIGURE B

Current Expenditure Priorities (Key Areas)

(Multiple responses allowed)

**FIGURE C**

Current Obstacles in Moving to Client/Server



The client/server computing market, estimated at \$11.6 billion in 1992, is projected to hit \$23.3 billion by 1997.

Some 25% of 250 IS execs surveyed are planning to downsize their applications base to client/server systems in the near term.

Dataquest estimated that by the first half of 1994, the downsizing trend will accelerate to 40% to 50% of all major corporate IS installations.

Information Builders' EDA/SQL

Cost-effective choice for legacy data access; relies heavily on 4GL

The Client/Server Journal's New Product Review is an evaluation based on interviews with major users at corporate, government and educational installations. The product under evaluation is being used in a production environment.

PROS / CONS

+ Evaluators found EDA/SQL to be reliable and very capable of meeting the promise of cross-platform multiple database access from PC to server to mainframe.

- Rough client/server LAN and PC installations and a reliance on knowledge of Information Builders, Inc.'s Focus fourth-generation language surprised some of the users.

RATINGS

EDA/SQL

Ratings are based on user expectations on a 1-to-5 scale, where 1 is below expectations and 5 is above expectations. Ratings are based in order of importance to users.

OVERALL RATING	4
EASE OF USE	4
EASE OF INSTALLATION (MAINFRAME)	4
EASE OF INSTALLATION (CLIENT/SERVER)	3
EASE OF PROGRAMMING	4
RELIABILITY	5
PERFORMANCE	3
TECHNICAL SUPPORT	4
ACQUISITION AND MAINTENANCE COST	4
VALUE	5
DATABASE SUPPORT	4
STANDARDS SUPPORT	4
NEW FEATURES/ENHANCEMENTS	4

Information Builders' Enterprise Data Access (EDA)/SQL is a rare client/server beast. It accomplishes many aspects of the promise of ubiquitous data access — it can obtain data from nearly any database on any platform and bring it to a workstation — and it has almost no direct competition.

"It's a product that solves a very specific and very critical problem. When you need to obtain data from mainframes, there are very few other ways to do this that are as cost-effective," said Judith Hurwitz, president of Hurwitz Consulting Group in Watertown, Mass.

Four evaluators at large user organizations running a variety of databases, platforms and networks report that it does just that. Once running, EDA/SQL meets ease of use, functionality and reliability goals. But installation and programming provided some obstacles for the sites.

The format for this evaluation was developed by Howard Rubin & Associates, with assistance from Technology Investment Strategies Corp. The questionnaire for EDA/SQL was created with assistance from Hurwitz Consulting Group.

EASE OF USE

The evaluators found EDA/SQL easy to use for Rdb, DB2 and Oracle, but IBM's IMS was harder to access and required more extensive use of Focus than some users expected.

Education 1: "We found it fairly easy to use. Once we got some working examples, the staff picked it up very quickly."

Industrial products: "They advertise that you just need to know SQL and the API, but because the bulk of our data is in IMS, it requires a little more knowledge of Focus than we thought."

"It runs against DB2, but it doesn't work with IMS without a tremendous amount of work. Compared to the other products on the market, it was the easiest to understand."

EASE OF INSTALLATION (Mainframe)

Information Builders' experience on the mainframe helped smooth installation, and the evaluators reported no problems.

Industrial products: "The mainframe was relatively easy."

Education 2: "Our installation on an IBM mainframe was a breeze."

EASE OF INSTALLATION (Client/server)

The variety of PC LAN configurations and relative lack of in-depth client/server experience made installation more difficult.

Industrial products: "We ran into a brick wall when it came to the PC. We don't

have a lot of control over what we have on the PCs. So consequently, each installation was a new territory for the Information Builders people, who did the installation."

Education 2: "When we tried to establish the client/server communication, it took at least two weeks before we were able to get it going. There are a lot of people at Information Builders who probably know the mainframe area and some other people that probably know the PC area. But knowledge about the combination of both was kind of hard to find within their organization."

EASE OF PROGRAMMING

Programming and database help are required to get up and running with EDA/SQL, the evaluators agreed. But the experienced Focus users had a shorter learning curve.

Education 2: "We've been using Focus for a long time. From the Focus perspective, it is very simple, very straightforward."

RELIABILITY

No major problems were reported, and minor ones were quickly addressed by the vendor.

Education 1: "It seems to be pretty reliable. We had some small issues with the stability of the VAX server early on, but we seem to have those ironed out."

Industrial products: "I'll give it a good rating because given the complexity of what we installed, we haven't had any serious breakdowns of the product. It's been people-type things and not the product that we've had to settle."

PERFORMANCE

There really aren't any benchmarks for EDA/SQL. Its performance cannot be compared to a single environment on-line access. The evaluators were satisfied with its speed.

Education 1: "It has been really good performance going against the DEC Rdb server. We're still working on IMS and could use more overhead there, but it's

EVALUATORS

SITE PROFILES

Installation descriptions for users who evaluated EDA/SQL

	EDUCATION 1	GOVERNMENT	EDUCATION 2	INDUSTRIAL
PLATFORMS	ES/9000 VAXCLUSTER	IBM 3090 PS/2s	IBM 3084 GUI TERMINALS	MAINFRAME HP 9000s
TIME IN USE	8 MONTHS	1½ YEARS	9 MONTHS	5 MONTHS
NUMBER OF APPLICATIONS	1	1	2	1
NUMBER OF IS SUPPORT STAFF	3	1	1	1½

about what I expected."

TECHNICAL SUPPORT

Depth of client/server installation experience was lacking, but evaluators had no problem getting the right people when needed.

Education 2: "Sometimes, when we found some problems running the product, the branch support people received help from [headquarters], and they were very receptive to our problems."

Industrial products: "The support is good once you get to the right person. They do have competent people at the root of their company."

Government: "The support that we have had is probably the best feature of the whole product."

ACQUISITION AND MAINTENANCE COSTS

Again, comparison is difficult. Users reported significant savings compared with the re-engineering effort that unifying their databases and platforms

FEATURES

EDA/SQL

Allows programmers to write a single API to access multiple databases.

Supports ANSI-standard SQL, major networking protocols and a large number of databases, operating systems and hardware platforms.

A multitool product, EDA/SQL relies on modular client and server components but provides a great deal of flexibility in dealing with incompatible databases.

would require if they weren't using EDA/SQL.

Education 1: "It was hard for us to know because, actually, it costs less than what I would expect for my alternative, which was to move all of my IMS and all

my other machines over to a DB2 environment. It gives us a low-cost option to move into the look and feel of client/server without having to re-engineer my back-end systems."

Education 2: "I think it is a very cost-effective solution for client/server. Our approximate total cost was around \$28,000."

Industrial products: "We had to do a cost estimation on this product before we could even bring it in-house. So in terms of the rental and the time that the individuals have placed into it, it ran about \$120,000. It's going to be a lot cheaper to plug and play than with the other mainframe products."

DATABASE SUPPORT

With support of most of the major databases, EDA/SQL can go against almost any platform. However, it performs better against SQL engines, the evaluators said.

Industrial products: "This goes back to the

Focus issue. We knew the database administration was required, we knew the programming was required, but we just didn't account for the Focus knowledge. Our end users are saying the same thing: 'God, I didn't realize I had to know so much Focus.'"

STANDARDS SUPPORT

Likewise, the major database and networking standards are supported to allow enterprisewide access.

Industrial products: "They don't support the same road map DCE does."

"Given that we have a large engineering environment that is looking strongly at [the Open Software Foundation's] DCE, [the lack of DCE support by certain PC vendors] could cause us some problems with bringing Information Builders' products in-house." ■

Written by Michael L. Sullivan-Trainor, Computerworld's research director

INFORMATION BUILDERS RESPONDS

EASE OF USE WITH RELATIONAL AND NONRELATIONAL DATABASES:

As a SQL-based product, EDA/SQL inherently supports the native database catalog of the advanced relational database. But nonrelational databases such as IMS were never designed to support SQL and do not support many of the capabilities found in relational databases.

To overcome this problem, EDA/SQL provides the means to set up a relational database-like catalog in which nonrelational meta data information must be stored to provide SQL-based access. The catalog must be set and maintained, however, in addition to any native relational database catalog the customer may be using. This is unavoidable with-

out database vendor extensions for nonrelational data in their catalogs.

KNOWLEDGE OF FOCUS: There is no Focus knowledge required to use EDA/SQL, unless the user chooses to use Focus as the language for writing Stored Procedures. In this case, knowledge of Dialog Manager and the Focus table language is required.

DIFFICULTY OF PC LAN INSTALLS: Client/server applications are inherently more complex than single platform applications, especially in the OS/2 environment. Tuning between synchronous and asynchronous communications environments also requires spe-

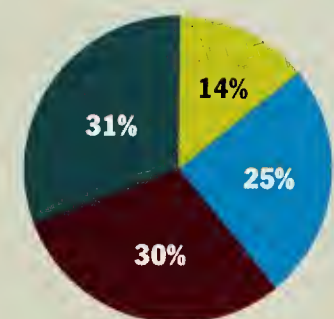
cialized expertise, which our customers typically do not have. For these reasons, we have enhanced both our field and headquarters technical support staffs to the point where we are confident we can help customers in establishing successful EDA/SQL installations.

DCE DIRECTIONS: As a member of the OSF, Information Builders supports the work of the OSF on DCE and has incorporated many DCE concepts into current versions of EDA/SQL. Unfortunately, DCE is still an emerging standard, and a DCE-based implementation of EDA/SQL would not be viable until most key vendors, on whose operating systems we run, support DCE.

Spanning the Legacy Data Gap

Survey finds users combining offerings from independent vendors with homegrown applications

Legacy Data Access Method



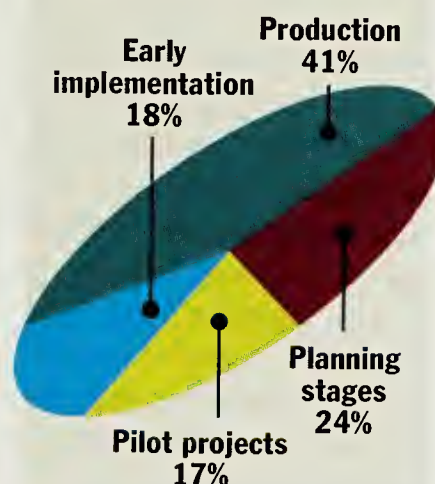
■ Independent vendor product
■ Homegrown tool/system
■ Host vendor product
■ Other

Top Reasons for Using These Methods

(in order of most frequent answer)

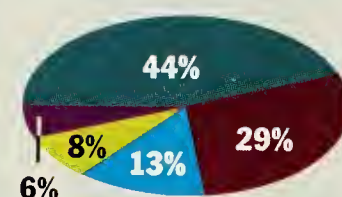
1. Most compatible with installed systems.
2. Best nonproprietary solution.
3. Easiest to implement.
4. Best price/lowest cost.
5. Best functionality.

Client/Server Status



Updating

When do you plan to eliminate old systems in favor of client/server?



■ Less than five years
■ Don't know
■ Less than one year
■ More than five years
■ Already have

Setting up desktop applications that can access data residing in heterogeneous legacy systems is one of the biggest challenges for users moving to client/server.

Our exclusive *Client/Server Journal* survey revealed that client/server pioneers are relying on a combination of homegrown tools and vendor-supplied systems to make legacy databases work with new applications.

Although there are few tools providing all the necessary functions, 56% of 200 information systems organizations surveyed relied on vendor-supplied tools to gain access to legacy data. The majority, however, chose independent vendor offerings rather than host vendor products.

Among the independent vendor solutions is Information Builders, Inc.'s

EDA/SQL, one of the few tools specifically aimed at legacy data access.

Survey respondents reported higher satisfaction levels with vendor tools than with homegrown ones. Compatibility with environments and availability of good, nonproprietary solutions were some reasons cited for selecting certain tools.

Homegrown tool users said integrating components was the most difficult task, followed by the amount of time it took them to develop the system. Users relying on vendor tools said "lack of expertise" on their own staffs was a stumbling block. ■

The survey was conducted by First Market Research Corp. For further information about the methodology, contact Michael L. Sullivan-Trainor, Computerworld, (800) 343-6474.

Biggest Problems with Accessing Legacy Data

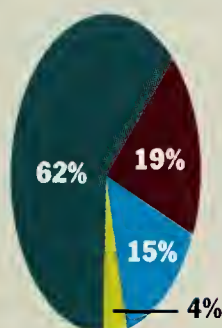
1 Staff lacks expertise

2 Difficult to integrate

3 Time-consuming

4 Hard to maintain data integrity

Time to Get Access Up and Running



■ Less than six months
■ Other/Don't know
■ Seven to 12 months
■ More than a year

What Vendors Can Do to Make Things Easier

1 Improve ease of use

2 Improve functionality

3 Provide more expertise

New client/server offerings from Epoch Systems, Tivoli Systems, Apple and others

TOOLS

INTERSOLV, INC. has announced **EXCELERATOR II**, a new release of its analysis and design tool.

According to the company, additional features in this release include a diagram editor for event modeling, a client/server development application guide for training users and support for data-, process- and event-driven design.

Excelerator II runs under Windows, OS/2 and Unix.

The price is \$6,500 per user. For existing customers, an upgrade is available at no cost.

INTERSOLV 3200 Tower
Oaks Blvd., Rockville, Md.
20852 (301) 230-3200.

APPLIX, INC. has unveiled **APPLIXWARE**, a set of applications and tools that allow integration of personal applications and business data.

Applications from the vendor include Applix Words, Applix Graphics, Applix Spreadsheets, Applix Data and Applix Mail.

ApplixWare is available on a variety of Unix-based platforms, including those from Sun Microsystems, Inc., Digital Equipment Corp., IBM, Hewlett-Packard Co. and Silicon Graphics, Inc.

Pricing for the ApplixWare product line ranges from \$195 to \$995.

APPLIX 112 Turnpike
Road, Westboro, Mass.
01581 (508) 870-0300.

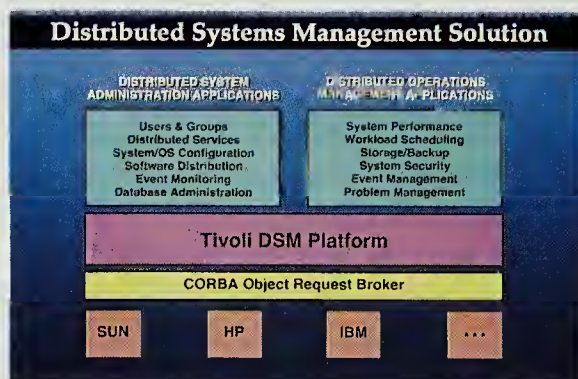
SEER TECHNOLOGIES, INC. has begun shipping **SEER/HPS DEVELOPMENT ENVIRONMENT VERSION 5.2**, an integrated set of software tools for development, deployment and management of distributed applications.

Among the new features are event- and message-based architecture, Advanced Peer-to-Peer Connectivity services for OS/2 and CICS client/server applications and analysis tools for the IBM Financial Services data model, according to the company.

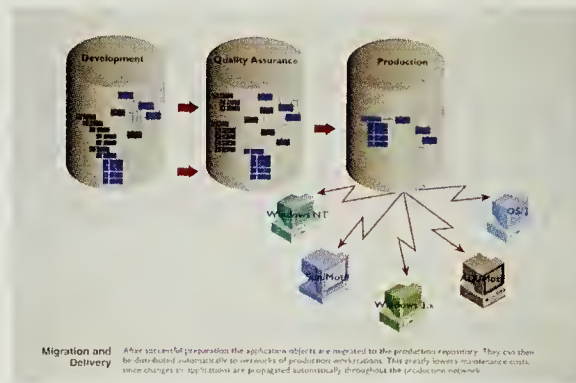
Seer/HPS Development Environment Version 5.2 supports host platforms such as MVS/ESA, DB2, IMS/ESA and CICS/VS. Servers supported include IBM mainframes, PS/2s, RS/6000s and Sun Microsystems, Inc. systems.

Pricing for the product starts at \$125,000 for a six-person development environment.

SEER TECHNOLOGIES 8000
Regency Pkwy., Cary, N.C.
27511 (919) 380-5000.



Enhancements to Tivoli's Management Environment include electronic-mail services



Seer's HPS Development Environment includes analysis tools for the IBM Financial Services data model

INFORMATION RETRIEVAL

The **APPLE BUSINESS SYSTEMS DIVISION** of **APPLE COMPUTER, INC.** has rolled out **APPLE-SEARCH**, an information retrieval system.

According to the firm, this customizable product turns unstructured documents stored on a server into an on-line library. It was designed for use in departmental or workgroup settings.

AppleSearch provides users with transparent access to documents in various formats, including word processing, spreadsheets and electronic mail.

The price of AppleSearch is \$1,799 for the client/server five-pack and \$499 for the client 10-pack.

APPLE BUSINESS SYSTEMS
20525 Mariani Ave., Cupertino, Calif. 95014 (408) 996-1010.

DATA MANAGEMENT

EPOCH SYSTEMS, INC. has announced **EPOCHSERV 6.0**,

a new release of its integrated client/server data management software products for backup, file migration and volume management.

EpochServ 6.0 includes enhancements for support of multilevel staging, the ability for files to span optical volumes and expanded peripheral support for Exabyte Corp., Hewlett-Packard Co., Sony Corp. and Storage Technology Corp. products, the firm said.

Pricing ranges from \$20,000 to \$40,000.

EPOCH SYSTEMS 8 Technology Drive, Westboro, Mass.
01581 (508) 836-4300.

SYSTEMS MANAGEMENT

TIVOLI SYSTEMS, INC. has announced enhancements to its **TIVOLI MANAGEMENT ENVIRONMENT** systems management software.

Enhancements include tools for managing printing and electronic-mail services across distributed computing environments and availability of the software for IBM's RS/6000.

Pricing for the Tivoli Management Environment Release 1.6 is \$924 per management station and \$625 per managed client.

TIVOLI SYSTEMS 6034 West Courtyard Drive, Austin, Texas 78730 (512) 794-9070. ■

Old Wine in New Bottles

Fair Juliet asked, "What is in a name?" while swooning over Romeo's name. "That which we call a rose by any other name would smell as sweet."

The denoted content is important, not the denoting name or label. Client/server is yet another label on a bottle of computing concepts that have not changed substantially in the past three decades. The real issues facing chief executive and information officers involve reinventing corporate information systems and the organizations they support.

The trend toward client/server is driven by two forces. First, there are 100+ million PCs, with some 25 million of them networked. This density of computing and storage power has coalesced into a critical mass demand for networking.

Second, the economics are inexorable. Large conglomerations of low-cost components are orders of magnitude less costly than proprietary mainframes and minicomputers. The demon is in controlling the mesh of components because distributed processing distributes errors and points of failure as well. Throw in issues such as security control, synchronization of client environments and distribution of software, and one gets the feeling that difficulties will persist for some time.

The essential central concept in client/server processing is messaging, which is the production, consumption and exchange of information among components of any computing resource. Networks are the vehicles of distributing messages, just as processors are the providers of instruction cycles and storage devices are the containers of data.

At Lehman, we have a sizable global network of some 9,000 Ethernet nodes: 3,000 Unix/TCP/IP, 3,000 PC/Novell, Inc. NetWare and 3,000 duplexed into routers, gateways and other network infrastructures.

Client/server architecture is

the rule in all trading floor systems and is guiding development of new back-office systems. PC networked applications are being constructed anew and rewritten using a client/server architecture.

I believe the newness of client/server is in its proliferation, not in its technical fundamentals. This proliferation stems from both the success of Unix workstations and the sheer ubiquity of networked PCs.

With improved PC networks, heterogeneous Unix/TCP/IP/Ethernet and Novell/DOS/Windows environments are quickly becoming commonplace. Most common will be Unix/Windows clients and Unix servers on a TCP/IP/Ethernet network with Token Ring gateway connectivity to legacy applications.

It all sounds amazingly like the open systems scenario. No great surprise. Interoperability is a keynote of open systems, involving the ability of components to easily exchange messages.

Think of open systems, client/server and object-oriented as technologies, while rightsizing is a packaging of products using these technologies. The end game, however, is global enterprisewide computing — the five-to-10-year quest that lies ahead.

Current tools and messaging protocols are too low-level to allow creation of software that operates equally well locally or globally. Powerful development tools and messaging application programming interfaces are needed that can hide the complexities of a global network.

Client/server, open systems, rightsizing and object-oriented are merely labels on the bottles. The message-based wine inside is what really counts in terms of the nose and the follow-through.

Finally, as food for thought: Juliet may think that a rose by any other name would smell as sweet, but would people eat honey if it were called bee vomit? ■

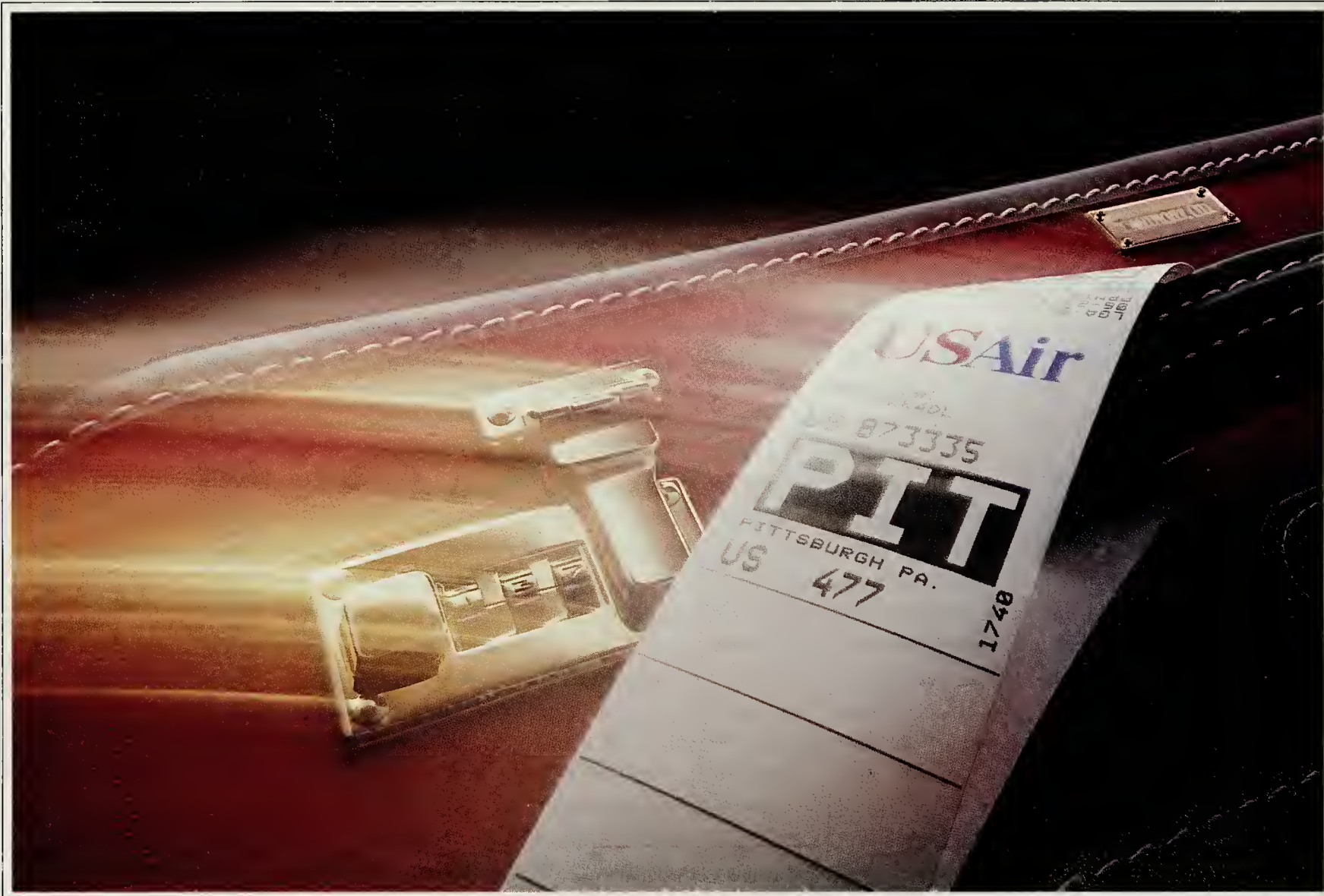


DAVID SHERR

Sherr is a vice president in investment banking technology at Lehman Brothers, Inc. in New York. His Internet address is sherr@lehman.com.

The essential central concept in client/server processing is messaging.

IBM Client / Server



PS/2, OS/2 and IBM are registered trademarks of IBM Corp. © 1993 IBM Corp.

“IBM helped us move as fast on the ground as we do in the air.”

John Harper, Sr. Vice President—Information Services, USAir. USAir wanted to create the terminal of the future at Pittsburgh International Airport. A place where lines would be shorter. Where baggage handling would be quicker and more dependable.

And everything from check-in to take-off would be easier and less confusing for travelers.

So IBM helped USAir develop a tailor-made system that makes information more

readily available to employees so they can be more responsive to customers. A system that maximizes the power of PCs and integrates a wide range of different manufacturers' equipment. A classic example of IBM Client/Server.

Information is now distributed from the mainframe to 650 PS/2[®] workstations running OS/2.[®] These workstations are tied into hundreds of ticket and boarding pass printers, touchscreens, credit card readers and other peripherals supplied by a number of companies.

The result: USAir employees and passengers now get immediate, consistent and reliable updates on pertinent information. Skycaps use touchscreens and bag-tag printers to streamline curbside check-in. And tower operators can make better decisions about managing gate traffic, resulting in fewer delays. In short, the airport of the future.

If you want a custom-tailored solution that gives your people more flexibility and gives you an edge on your competition, IBM Client/Server is the answer. For more information, call 1 800 IBM-0045, ext. 20.

There's never been a better time to do business with



IBM Client/Server Database Solutions

It's available now – ready to perform on your desktop. A new function-rich, 32-bit relational database you can really trust with your growing client/server network, your mission – critical data *and* your business.

Introducing IBM DATABASE 2™ OS/2® (DB2/2™) from IBM Software Solutions, the birthplace of relational database technology.

DB2/2 includes an industrial-strength DB engine that supports transaction management, concurrency control, security, integrity, and recovery functions. Designed to exploit the power and open architecture of OS/2, it also supports industry-standard SQL for developing portable applications. And it runs your DOS, DOS Windows™ and OS/2 applications requiring *online* access.

You can access data directly from DB2/2 on your desktop or from a DB2/2 server on your LAN, and with

DB2 goes

DISTRIBUTED DATABASE
CONNECTION SERVICES/2,™
from DB2®, SQL/DS,™ and OS/400®
databases as if they were on your desktop, too.
This versatility can play a significant role in
an Information Warehouse™ solution
for your business.

We've developed an

desktop.



exciting demo diskette to show you just how well new DB2/2 performs – right on your desktop. Call us today for your free demo, or to order DB2/2: 1-800-342-6672; or fax: 1-800-445-2426. In Canada, call 1-800-465-7999, ext. 850. An upgrade from OS/2 Extended Edition or Extended Services is also available.